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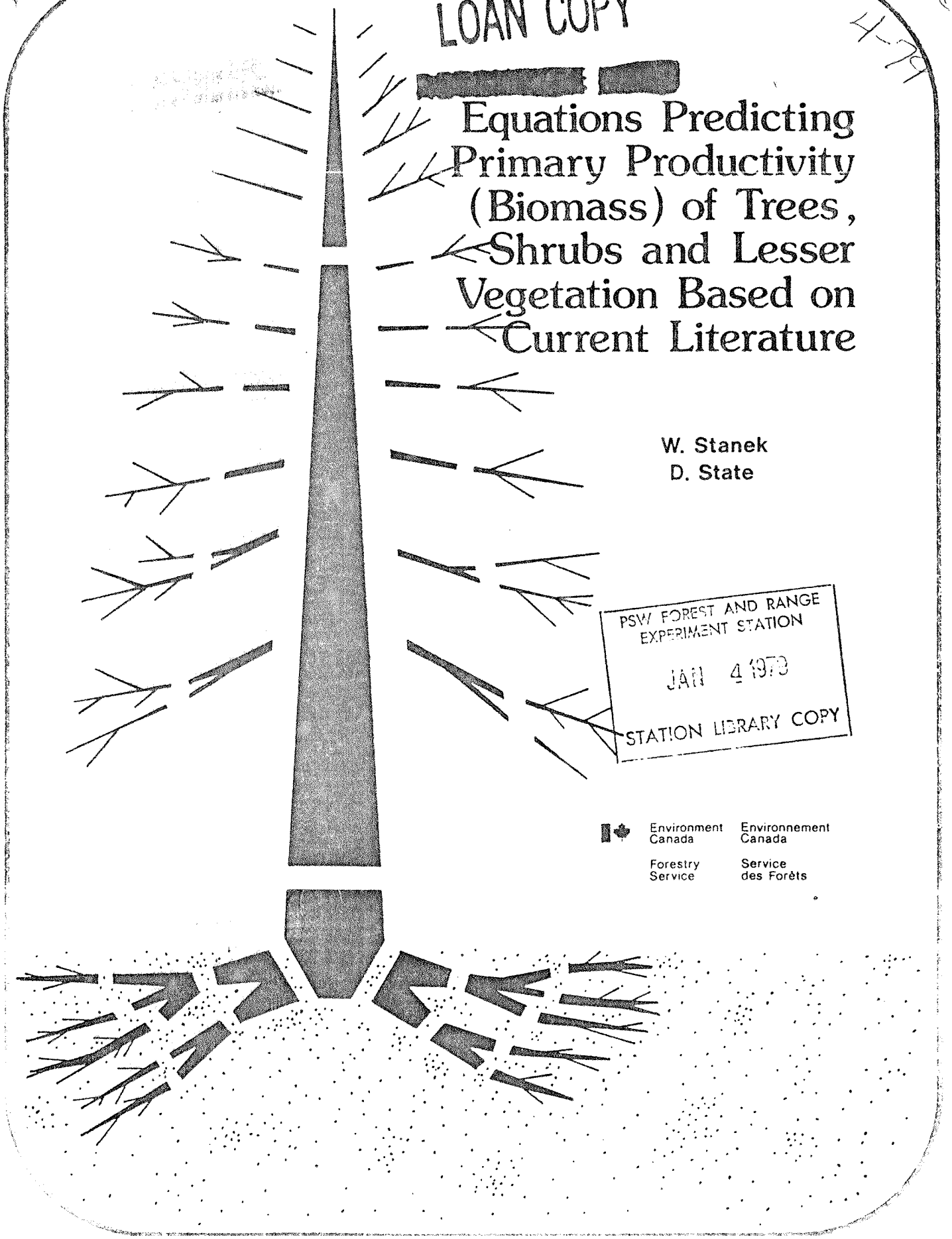

Equations Predicting Primary Productivity (Biomass) of Trees, Shrubs and Lesser Vegetation Based on Current Literature

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Forestry Service | Service des Forêts

ABSTRACT

The report contains regression equations for calculations of biomass of several mainly Canadian forest species (trees, shrubs, lesser vegetation) and their components (leaves, branches, bole, bark, wood, roots, etc.).

The lists are arranged by plant species in alphabetical order of common names. Glossaries and a sketch define the tree components. Many pertinent references are given.

RÉSUMÉ

Ce rapport contient des équations de régression pour le calcul de la biomasse de plusiers espèces forestières surtout canadiennes (arbres, arbustes, végétation basse) et leurs parties (feuilles, branches, fût, écorce, bois, racines, etc.).

Sont énumérés les noms communs des plantes par ordre alphabétique. Des glossaires et un dessin définissent les parties des arbres. Maintes références pertinentes sont incluses.

INTRODUCTION

Forest productivity may be envisaged from two distinct aspects: economic and biological (Duvigneaud in Anon. 1971b). The former evaluates the volume of solid wood per unit area, the latter the dry weight of tree components in kilocalories. Economic forest productivity is familiar to most foresters and has long been an essential part of forest management. In contrast, biological forest productivity has come into focus relatively recently, as a result of advances in knowledge of the ecosystem (biogeocoenosis) or concern with energy supply.

The foundations of the science of biological productivity of forests were laid by Boysen Jensen (1910 and 1932), who defined the concepts and developed techniques and methods, though, in the last century, considerable contributions were made by pioneers such as Ebermayer in Germany or Henry in France. Among other works, Ovington's (1957) "Dry matter production of Pinus sylvestris" is a classic, and Lieth's (1962) Proceedings of the Symposium "Stoffproduktion der Pflanzendecke" (productivity of the vegetal cover), held in Stuttgart-Hohenheim, is important in that it identifies problems and methods.

The impetus for more research came in 1963 when, under the auspices of the International Biological Program (IBP), the "Section PT" (Productivity of Terrestrial Communities) met and proposed a definitive 7-year program (Duvigneaud in Anon. 1971b).

Since then, several IBP meetings have taken place and many findings have been published. Those accessible to us have been listed under References. Of special interest are the Proceedings of the Brussels Symposium in October 1969 (Anon. 1971b), which is actually a 6-year IBP progress report and state-of-art review of productivity of forest ecosystems.

In the latter report, primary biological forest productivity (PBFP)[1/] is defined by Duvigneaud as the rate of production by which energy is stored through the activity of producing organisms, photosynthetic or chemosynthetic, in the form of an organic substance suitable for alimentary utilization.

The gross PBFP (total photosynthesis, total assimilation) is the rate of total photosynthesis, including the organic matter utilized for respiration during the period of measuring. The net PBFP (apparent photosynthesis, net assimilation) is the rate of organic matter production in the form of vegetable tissues, less the matter utilized for respiration during the period of measuring. The followers of Boysen Jensen define the net PBFP as the gross dry matter production minus the dry matter of lost leaves, branches, roots, and through respiration of leaves, branches, stem and roots. It is important to note the basic difference between the two definitions.

The net primary biological productivity may also be defined as the rate of biomass production (energy storage). Newbould (1967) defined biomass as the total amount of photosynthetic plants making up a woodland stand and takes it to include heartwood and bark (which may no longer be alive) but not dead roots and dead branches. In context, biomass should be expressed in terms of dry weight, or ash-free dry weight (=organic weight), and can be estimated directly by weighing or indirectly from measurements of the volume and density of the various components concerned.

The fundamentals for estimation of biomass and its increment, as well as field sampling methods, treatment of samples and evaluation of data have been presented in many publications. Among them are those by Boysen Jensen 1932; Kira et al. 1967; Newbould 1967; Milner and Hughes 1968; Duvigneaud in Anon. 1971b, pp. 111-140; Whittaker and Woodwell in Anon. 1971b, pp. 159-175.

Of prime interest is the determination of periodic biomass increment ΔB during the time period Δt or annual biomass increment (when the period amounts to 1 year).

$$\Delta B = B_2 - B_1 = P_n - (L + G)$$

Where B_2 and B_1 represent the biomass at the end and beginning of the period, P_n stands for net productivity during Δt, L for plant losses by death and shedding during Δt and G for plant losses owing to consumer during Δt.

Biomass data are essential for the quantita-

1/ The secondary productivity is the rate of energy accumulation at trophic levels of consumers and decomposers, and obviously will depend on vegetable matter produced by primary productivity.

tive evaluation of renewable resource potential (Keays in Anon. 1971). They have been used for comparing plant communities, studying the biological and physical processes that affect productivity, and energy flow and utilization relationships in nature. They are also important in forest fuel estimations, and in determining fire behavior in terms of both wildfire and prescribed burning on forest lands (Brown 1965; Kiil 1967; Kurucz 1969; and others).

Biomass determinations may also provide estimates of pulp yield and a basis for determining the feasibility of complete tree utilization for such purposes as wood products, ruminant fodder (Reid 1976; Young 1976; and others), chemicals and fuel.

Fresh or oven-dry biomass of trees, shrubs or lesser vegetation and the components thereof, such as foliage, branches, roots and tree bole, etc., can be determined by many destructive and non-destructive methods. In studies referred to, relationships were developed of biomass and easily determinable characteristics (diameter at breast height or at ground level, tree height, etc.) to facilitate practical application.

The objective of this report is to compile, for use at the PFRC, from available literature, regression equations for calculation of biomass of forest communities and individual plants (trees, shrubs, lesser vegetation) and their components (leaves, branches by size class, bole, merchantable bole, bark, wood, roots by size classes, etc.).

METHODS

Most of the publications concerned with biomass, contain information on methods used by the authors. It is not intended to review the many approaches and techniques; instead, a list is presented of regression equations found in the literature (Appendix). The occurring variables, symbols of which have been standardized, are defined in the "Glossary of Independent Variables". The tree components (Fig. 1) for which the biomass equations were developed, have also been given in standardized form and are defined in the "Glossary of Equation Titles". The glossaries are self explanatory and refer to notations used in the Appendix.

The lists of regression equations (Appendix) are arranged by plant species in alphabetical order of common names. In the first column are given the species, author, year of publication and equation title. Question mark (?) in the equation title indicates that this information was not given in the original report. Biomass fresh weights (FW) or oven-dry weights (ODW) are, with two exceptions, per individual trees, and are shown in column "FW or ODW". The published regression equations are given in the column "Prediction Equations". The numbers of observations on which the equations are based are contained in column "n" and the coefficient of determination (R^2) or the simple correlation coefficient (r) under column "R^2 or r". Where (r) is not specified, values arestaken as denoting R^2. In all cases, R^2 and r values were rounded up to two decimals except where they approached 1.0, in which instances they were taken as .99. The range of diameters at ground level, or diameters at breast height, is shown in the last column as "Range of diameters at ground level in mm or diameters at breast height in cm".

Scientific names of plant species are given in the "Glossary of Species Names".

Glossary of Equation Titles

The names of variables used by the different authors have been standardized and defined below to facilitate comparisons. The individual tree components are shown in Figure 1 (based on Young et al. 1964), and are defined as follows.

1) **Small roots** - all roots or root portions as a general rule less than 2.5 cm (1") in diameter.

2) **Medium roots** - roots as a general rule from 2.5-10 cm (1-4") in diameter.

3) **Large roots** - roots as a general rule larger than 10 cm (4").

4a) **Stump above ground level.**

4b) **Stump below ground** - usually to where large roots are apparent.

5) **Bole** - merchantable stem from the stump to a merchantable top diameter.

6) **Large branches** - usually larger than 2.5 cm (1").

7a) **Small branches** - usually smaller than 2.5 cm (1").

7b) **Leaves or needles.**

8) **Unmerchantable top.**

The equations for individual components or groups of components have titles that can be defined in the above terms as follows:

The following additional abbreviations were used mainly to save space: > = larger than, < = smaller than, + = plus, — = minus, & = and, " = inches, cm = centimeters, mm = millimeters, lbs = weight in pounds, kg = weight in kilograms, g = weight in grams, Dom = dominant, Codo = codominant, t = top diameter of stem, s = stump height.

In the following cases, the dependent variables were not precisely defined: Ribe (1973) did not define stem, but probably means stem above ground level. Kurucz (1969) did not define bole, but is probably equivalent to stem.

Equation Title	Dependent variables	Components (shown in Fig. 1)
Tree tot.	Total or complete tree or plant	1,2,3,4,5,6,7,8
Tree	Tree or whole plant above ground level	4a,5,6,7,8
Tree a.s.* * known stump height	Tree above stump	5,6,7,8
Stem	Stem above ground level	4a,5,8
Stem a.s.* *known stump height	Stem above stump	5,8
Bole s* t** *known stump height **known top diameter	Merchantable stem	5
Stump	Stump	4a+b
Roots	Roots	1,2,3
Crown	Branches & foliage	6,7a+b
Branch	Branches	6,7a
Foliage	Needles or leaves	7b
Bark	Bark only	
Wood	Wood only	
Slash t ** **known top diameter	Branches, foliage & top	6, 7a+b,8

All components and diameter measurements are understood to include bark (outside bark, o.b.) unless stated as inside bark (i.b.). Pertinent sizes of branches and roots are indicated in the equation title.

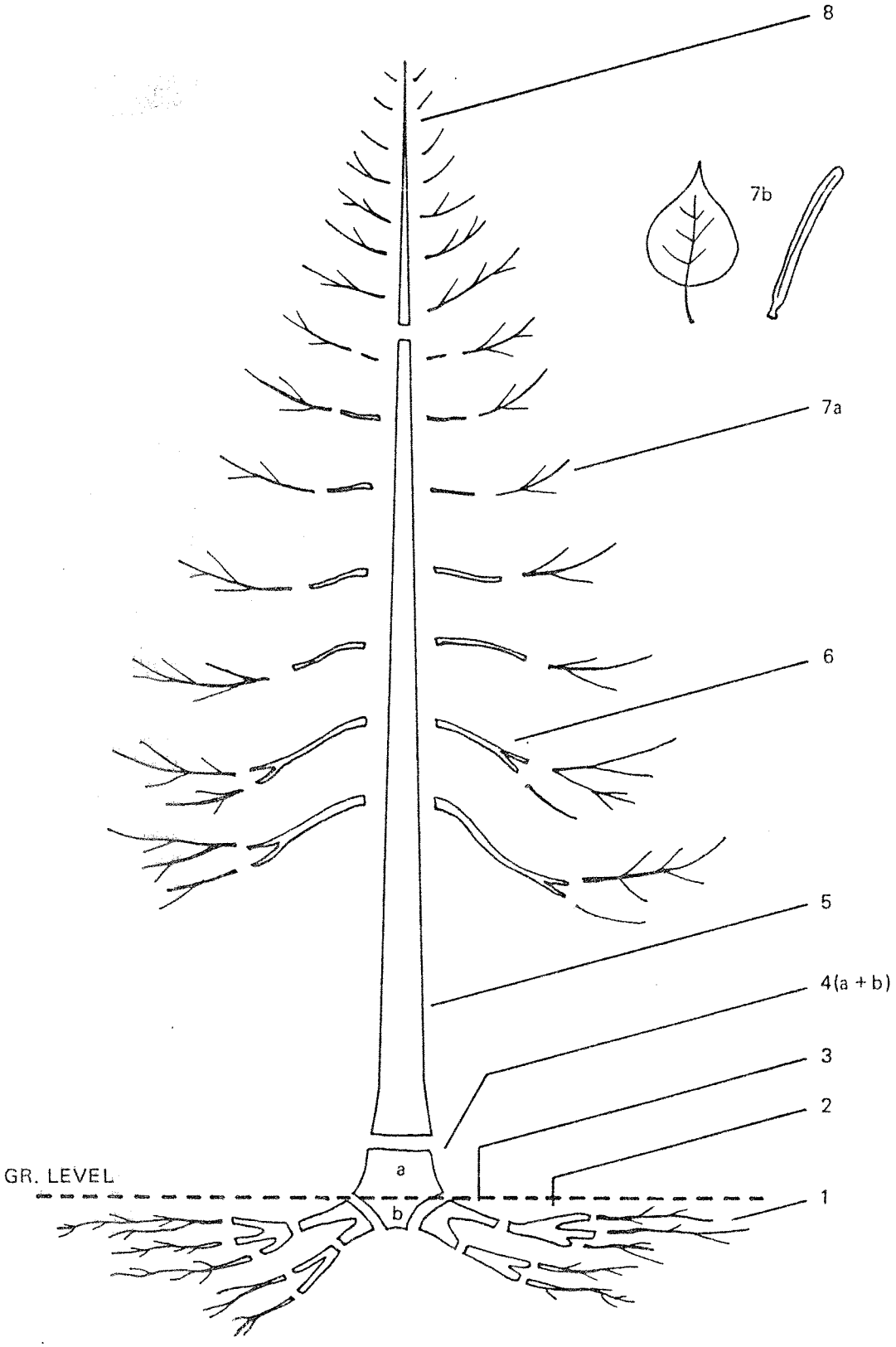

Figure 1. Diagrammatic sketch showing the components of a tree.
(adapted from Young et al. 1964)

GLOSSARY OF INDEPENDENT VARIABLES

List of notations used in Appendix. All diameters were measured outside bark.

A_1 = Total age in years

A_2 = $1/A_1$

A_3 = Reciprocal of increment core specific gravity

BA = Basal area at breast height $r^2 \pi (cm^2)$

BR = Branchiness class (1-5)

CH = Canopy height (m)

CL = Crown length (cm)

CL_m = Crown length (m)

CR = Crown ratio (CL/Height x 100%)

CS = Crown surface = $\pi/4$ CW $\sqrt{CL^2 + CW^2}$

CV = Crown volume $\pi/12(CW^2)CL$

CW = Crown width (ft)

CW_m = Crown width (m)

D = Diameter at crown base (cm) - just below leaf bearing branch

D_1 = Diameter at breast height (in)

D_2 = Diameter at breast height (cm)

D_3 = Diameter at breast height (m)

D_4 = Diameter at ground level (mm)

D_5 = Diameter at ground level (cm)

D_{11} = Diameter at ground level (in)

D_6 = (D^2H) = diameter at breast height squared (in^2) height (ft)

D_7 = (D^2H) = diameter at breast height squared (m^2) height (m)

D_8 = (D^2H) = diameter at breast height squared (cm^2) height (cm)

D_9 = (D^2H) = diameter at breast height squared (cm^2) height (m)

DC_1 = (DxCLE) Diameter at breast height (in) multiplied by crown length (ft)

DC_2 = $(DxCLE)^2$ The product to the square of diameter at breast height (in) and crown length (ft)

DC_3 = $(DxCW^2)$ diameter at breast height (in) multiplied by crown width squared (ft^2)

g/m^2 = Grams per meter squared

ha = Hectare

H_1 = Height above ground (ft)

H_2 = Height above ground (cm)

H_3 = Height above ground (m)

IV = $(D_2^2 H_3)/100$

L = Geographic latitude

log = Common logarithm

ln = Natural logarithm

ME = Average diffuse light intensity (micro-einstein m^2 sec^{-1} = 6.02×10^{17} photons)

MT = Metric tons

n = Number of observations

P = Per cent

r = Simple correlation coefficient

R^2 = Coefficient of determination

S_1 = Stump diameter (cm)

SI = Site Index at age 50

TA = Trees per acre

V = % vegetation cover

GLOSSARY OF SPECIES NAMES

Alder - Speckled	- Alnus rugosa (DuRoi) Spreng.
- Red	- Alnus rubra Bong.
Aspen - Trembling (Quaking)	- Populus tremuloides Mich.
Bayberry	- Myrica pensylvanica Loisel
Beech	- Fagus grandifolia Ehrh.
Birch - Gray	- Betula populifolia Marsh.
- White (paper)	- Betula papyrifera Marsh.
- Yellow	- Betula alleghaniensis Britt.
Blueberry - Lowbush	- Vaccinium vacillans Torr.
Cedar - Northern White	- Thuja occidentalis L.
- Western Red	- Thuja plicata Donn
Cherry - Choke	- Prunus virginiana L.
- Pin	- Prunus pensylvanica L.f.
Douglas-fir - see Fir - Douglas	
Fern - Sweet	- Comptoria peregrina (L.) Coult.
- Bracken	- Pteridium aquilinium (L.) Kuhn.
Fir - Amabilis (Pacific Silver)	- Abies amabilis (Dougl.) Forb.
- Balsam	- Abies balsamea (L.) Mill.
- Douglas	- Pseudotsuga menziesii (Mirb.) Franco
- Subalpine	- Abies lasiocarpa (Hook.) Nutt.
Hemlock - Eastern	- Tsuga canadensis (L.) Carr
- Mountain	- Tsuga mertensiana (Bong.) Carr.
- Western	- Tsuga heterophylla (Raf.) Sarg.
Hobblebush	- Viburnum alnifolium Marsh.
Honeysuckle - American Fly	- Lonicera canadensis Bartr.
Holly - Canada	- Ilex verticillata (L.) A. Gray
- False	- Nemopanthus mucronata Trel.
Huckleberry - Black	- Gaylussacia baccata Wang.
Inkberry	- Ilex glabra
Labrador Tea	- Ledum groenlandicum Oedr.
Laurel - Sheep	- Kalmia augustifolia (L.)
Leatherleaf	- Chamaedaphne calyculata (I.) Moench.

Maple - Red	- Acer rubrum (L.)
- Striped	- Acer pensylvanicum (L.)
- Sugar	- Acer saccharum March.
Oak - Black	- Quercus velutina Lam.
- Red	- Quercus rubra (L.)
- Scarlet	- Quercus coccinea Muenchh.
- Scrub	- Quercus ilicifolia Wang.
- White	- Quercus alba (L.)
Pine - Jack	- Pinus banksiana Lamb.
- Lodgepole	- Pinus contorta Dougl.
- Pitch	- Pinus rigida Mill.
- Red	- Pinus resinosa Ait.
- Scots	- Pinus sylvestris (L.)
- Slash	- Pinus elliottii Engelm.
- White	- Pinus strobus L.
Rhododendron	- Rhododendron canadense Marsh.
Salal	- Gaultheria shallon Pursh.
Spirea - meadowsweet	- Spiraea spp. (Tourn.) L.
Spruce - Black	- Picea mariana (Mill.) B.S.P.
- Norway	- Picea abies (L.) Karst.
- Red	- Picea rubens Sarg.
- White	- Picea glauca (Moench) Voss
Willow	- Salix spp. (Tourn.) L.
Witch Hazel	- Hamamelis virginiania (L.)
Whithe - Rod	- Viburnum cassionoides (L.)

Species names for trees are according to: Harlow & Harrar 1958.

Species names for lesser vegetation are according to: Peck 1941 & Marie-Victorin 1964.

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Appendix Regression equations for biomass of individual species
(for explanation of details see text)

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Alder					
Speckled					
(Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.5987 + 1.2510 \log D_2$	30	.70	2.5–7.5 (cm)
Branches	FW-g	$\log Y = 2.7096 + 1.4877 \log D_2$	30	.77	2.5–7.5 (cm)
Stem	FW-g	$\log Y = 3.0095 + 2.4534 \log D_2$	30	.93	2.5–7.5 (cm)
Foliage	ODW-g	$\log Y = 2.1759 + 1.2463 \log D_2$	30	.67	2.5–7.5 (cm)
Branches	ODW-g	$\log Y = 2.4072 + 1.5184 \log D_2$	30	.78	2.5–7.5 (cm)
Stem	ODW-g	$\log Y = 2.7051 + 2.5847 \log D_2$	30	.93	2.5–7.5 (cm)
Alder					
Red					
(Smith, J., 1972)					
Tree	FW-g	$Y = 1942.91 + 93.4572\ D_6$	230	.86	3–149 (mm)
Tree	FW-g	$Y = 933.341 + 54.737\ (D_9)\ ^2H_1$	230	.90	3–149 (mm)
Foliage	FW-g	$Y = 454.086 + 53578\ BA$	230	.52	3–149 (mm)
Stem	FW-g	$Y = 933.984 + 277680\ BA$	230	.78	3–149 (mm)
Branches	FW-g	$Y = 251.325 + 98022.2\ BA$	230	.70	3–149 (mm)
Tree	FW-g	$Y = 1634.34 + 428724\ BA$	230	.81	3–149 (mm)
Tree	FW-g	$\log Y = 3.67006 + 2.03887 \log D_{11} - 1.64423 \log H_1$	230	.94	3–149 (mm)
Tree	FW-g	$\log Y = 3.47024 + 1.94582 \log D_{11}$	230	.94	3–149 (mm)
Alder					
Red					
(Smith, N., 1977)					
Stem, wood	ODW-kg	$Y = 1.31625 + .346084\ ((D_5)\ ^2H_3)/100 + .573351\ D_9/100$	72	.97	4.2–6.0 (cm)
Stem, bark	ODW-kg	$Y = .370339 + .0227208\ ((D_5)\ ^2H_3)/100 + .140593\ D_9/100$	72	.95	4.2–6.0 (cm)
Stem, wood & bark	ODW-kg	$Y = 1.686589 + .368048\ ((D_5)\ ^2H_3)/100 + .713944\ D_9/100$	72	.98	4.2–6.0 (cm)
Total Crown (including reproductive organs)	ODW-kg	$Y = .940575 + .566637\ D_9/100 + .0484421\ CL_m/CW_m$	66	.69	4.2–6.0 (cm)
Branches <.6 cm and foliage	ODW-kg	$Y = .429308 + .422831\ D_9/100 + .0487709\ CL_m/CW_m$	66	.68	4.2–6.0 (cm)
Branches <.6 cm	ODW-kg	$Y = .487593 + .130159\ D_9/100 + .01159\ CL_m/CW_m$	66	.64	4.2–6.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Alder					
Red					
(Zavitkovski & Stevens, 1972)					
Crowns	ODW-kg	$Y = .01 + .48\ IV - .0009\ (IV)^2$	91	.75	1.25 – 152.5 (cm) (i.b.)
Stems	ODW-kg	$Y = .02 + 1.60\ IV - .0005\ (IV)^2$	91	.99	1.25 – 152.5 (cm)
Tree	ODW-kg	$Y = .02 + 2.09\ IV - .0015\ (IV)^2$	119	.98	1.25 – 152.5 (cm)
Roots (estimated)	ODW-kg	$Y = .1 + .48\ IV - .0005\ (IV)^2$	–	–	1.25 – 152.5 (cm)
Tops	ODW-MT/ha	$Y = 17.15 + 5.24\ CH + .143\ (CH)^2$	50	.98	1.25 – 152.5 (cm)
Aspen					
sp.					
(Young et al., 1964)					
Tree tot.	FW-lbs	$\ln Y = .6800 + 2.2234\ \ln D_1 + .3390\ \ln H_1$	14	.97	14.5 – 24.5 (cm)
Tree tot.	ODW-lbs.	34% of FW from above equation	14	.97	14.5 – 24.5 (cm)
Tree tot. - Roots < 4"	FW-lbs	$\ln Y = -1.5880 + 2.0013\ \ln D_1 + 1.0100\ \ln H_1$	14	.97	14.5 – 24.5 (cm)
Tree tot. - Roots < 4"	ODW-lbs	35% of FW from above equation	14	.97	14.5 – 24.5 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = 2.066 + 2.1679\ \ln D_1 + .4292\ \ln H_1$	14	.97	14.5 – 24.5 (cm)
Tree a.s. 6"	ODW-lbs	35% of FW from above equation	14	.97	14.5 – 24.5 (cm)
Stem a.s. 6"	FW-lbs	$\ln Y = -1.4518 + 1.8801\ \ln D_1 + .9332\ \ln H_1$	14	.98	14.5 – 24.5 (cm)
Stem a.s. 6"	ODW-lbs	38% of FW from above equation	14	.98	14.5 – 24.5 (cm)
Bole a.s. 6", t. 4"	FW-lbs	$\ln Y = -1.9730 + 2.0215\ \ln D_1 + .9670\ \ln H_1$	14	.97	14.5 – 24.5 (cm)
Bole a.s. 6", t. 4"	ODW-lbs	38% of FW from above equation	14	.97	14.5 – 24.5 (cm)
All branches	FW-lbs	$\ln Y = 2.5720 + 3.7019\ \ln D_1 - 1.3520\ \ln H_1$	14	.88	14.5 – 24.5 (cm)
All branches	ODW-lbs	21% of FW from above equation	14	.88	14.5 – 24.5 (cm)
Branches < 1 in	FW-lbs	$\ln Y = 5.0497 + 2.8069\ \ln D_1 - 1.6230\ \ln H_1$	14	.74	14.5 – 24.5 (cm)
Branches < 1 in	ODW-lbs	9% of FW from above equation	14	.74	14.5 – 24.5 (cm)
Stump 6" & roots > 1 in	FW-lbs	$\ln Y = -11.6867 + 1.6151\ \ln D_1 + 3.2358\ \ln H_1$	14	.78	14.5 – 24.5 (cm)
Stump 6" & roots > 1 in	ODW-lbs	34% of FW from above equation	14	.78	14.5 – 24.5 (cm)
Roots > 1 in	FW-lbs	$\ln Y = -15.5139 + 1.2752\ \ln D_1 + 4.2545\ \ln H_1$	14	.64	14.5 – 24.5 (cm)
Roots > 1 in	ODW-lbs	30% of FW from above equation	14	.64	14.5 – 24.5 (cm)
Roots < 1 in	FW-lbs	$\ln Y = -1.6126 + 1.6306\ \ln D_1 + .3564\ \ln H_1$	14	.08	14.5 – 24.5 (cm)
Roots < 1 in	ODW-lbs	19% of FW from above equation	14	.08	14.5 – 24.5 (cm)

Appendix

SPECIES (Reference Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Aspen					
sp.					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = -0.228 + 2.328 \ln H_1$	6	.93	0.0 – 75 (mm)
Branches	FW-g	$\ln Y = -2.613 + 3.130 \ln H_1$	6	.89	0.0 – 75 (mm)
Stem	FW-g	$\ln Y = -1.482 + 3.364 \ln H_1$	6	.99	0.0 – 75 (mm)
Roots	FW-g	$\ln Y = -0.388 + 2.707 \ln H_1$	6	.93	0.0 – 75 (mm)
Tree tot.	FW-g	$\ln Y = 0.167 + 3.034 \ln H_1$	6	.97	0.0 – 75 (mm)
Foliage	ODW-g	$\ln Y = -1.118 + 2.352 \ln H_1$	6	.95	0.0 – 75 (mm)
Branches	ODW-g	$\ln Y = -3.225 + 3.144 \ln H_1$	6	.92	0.0 – 75 (mm)
Stem	ODW-g	$\ln Y = -2.064 + 3.334 \ln H_1$	6	.99	0.0 – 75 (mm)
Roots	ODW-g	$\ln Y = -1.331 + 2.754 \ln H_1$	6	.94	0.0 – 75 (mm)
Tree tot	ODW-g	$\ln Y = -0.653 + 3.067 \ln H_1$	6	.97	0.0 – 75 (mm)
Aspen					
Trembling (Quaking)					
(Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.4385 + 1.6566 \log D_2$	30	.76	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.5550 + 1.7990 \log D_2$	30	.85	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.0207 + 2.6528 \log D_2$	30	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 2.0243 + 1.6796 \log D_2$	30	.75	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.2178 + 1.8545 \log D_2$	30	.85	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 2.6672 + 2.7859 \log D_2$	30	.99	2.5 – 15.0 (cm)
Aspen					
Trembling (Quaking)					
(Peterson, Chan and Cragg, 1970)					
Tree	ODW-kg	$\log Y = -1.1115 + 2.3466 \log D_2$	49	.98 (r)	4.5 – 33.0 (cm)
Stem	ODW-kg	$\log Y = -1.1893 + 2.3564 \log D_2$	49	.97 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$\log Y = -2.0978 + 2.3708 \log D_2$	49	.97 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$\log Y = -2.3011 + 1.9742 \log D_2$	49	.97 (r)	4.5 – 33.0 (cm)
Crown	ODW-kg	$\log Y = -1.9282 + 2.2990 \log D_2$	49	.97 (r)	4.5 – 33.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Aspen					
Trembling (Quaking) (Peterson, Chan and Cragg, 1970) .... cont'd					
Tree	ODW-kg	$\log Y = -3.2198 + 0.8993 \log D_2$	49	.99 (r)	4.5 – 33.0 (cm)
Stem	ODW-kg	$\log Y = -3.3211 + 0.9061 \log D_8$	49	.99 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$\log Y = -4.1237 + 0.8870 \log D_8$	49	.95 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$\log Y = -4.0324 + 0.7478 \log D_8$	49	.96 (r)	4.5 – 33.0 (cm)
Crown	ODW-kg	$\log Y = -3.8965 + 0.8610 \log D_8$	49	.95 (r)	4.5 – 33.0 (cm)
Tree	ODW-kg	$\log Y = -8.1917 + 3.1855 \log D_4$	49	.92 (r)	4.5 – 33.0 (cm)
Stem	ODW-kg	$\log Y = -8.4267 + 3.2424 \log D_4$	49	.93 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$\log Y = -8.3477 + 2.9097 \log D_4$	49	.82 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$\log Y = -7.8891 + 2.5541 \log H_2$	49	.87 (r)	4.5 – 33.0 (cm)
Crown	ODW-kg	$\log Y = -8.0216 + 2.8328 \log H_2$	49	.83 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$\log Y = -1.3967 + 2.1979 \log D$	49	.98 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$\log Y = -1.7121 + 1.8229 \log D$	49	.98 (r)	4.5 – 33.0 (cm)
Crown	ODW-kg	$\log Y = -1.2500 + 2.1336 \log D$	49	.99 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$\log Y = -7.1668 + 2.9132 \log CL$	49	.86 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$\log Y = -6.6624 + 2.4816 \log CL$	49	.88 (r)	4.5 – 33.0 (cm)
Crown	ODW-kg	$\log Y = -6.8470 + 2.8263 \log CL$	49	.87 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$\log Y = -0.8411 + 0.6348 \log CR$	49	.12 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$\log Y = -1.0023 + 0.3701 \log CR$	49	.08 (r)	4.5 – 33.0 (cm)
Crown	ODW-kg	$\log Y = -0.6744 + 0.5936 \log CR$	49	.12 (r)	4.5 – 33.0 (cm)
Stem & Branches	ODW-kg	$\log Y = -1.1344 + 2.3567 \log D_2$	49	.98 (r)	4.5 – 33.0 (cm)
Stem & Branches	ODW-kg	$\log Y = -3.2531 + 0.9035 \log D_8$	49	.99 (r)	4.5 – 33.0 (cm)
Stem & Branches	ODW-kg	$\log Y = -8.2569 + 3.2033 \log H_2$	49	.92 (r)	4.5 – 33.0 (cm)
Branches	ODW-kg	$Y = 0.0639\ D^{2.0291}$	49	.99 (r)	4.5 – 33.0 (cm)
Foliage	ODW-kg	$Y = 0.0301\ D^{1.6238}$	49	.99 (r)	4.5 – 33.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Aspen					
Trembling (Quaking) (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.920 + 2.715 \ln D_4$	20	.99	2.3 - 40.6 (cm)
Foliage	ODW-g	$\ln Y = -2.677 + 2.156 \ln D_4$	20	.96	2.3 - 40.6 (cm)
Bayberry (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.494 + 2.867 \ln D_4$	20	.98	1.9 – 12.0 (mm)
Foliage	ODW-g	$\ln Y = -2.913 + 2.529 \ln D_4$	20	.93	1.9 – 12.0 (mm)
Beech (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.647 + 2.906 \ln D_4$	20	.99	1.8 – 35.5 (mm)
Foliage	ODW-9	$\ln Y = -3.910 + 2.354 \ln D_4$	20	.99	1.8 – 35.5 (mm)
Beech (Ribe, 1973)					
Foliage	FW-9	$\log Y = 2.4271 + 1.7292 \log D_2$	19	.85	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.8179 + 1.5359 \log D_2$	19	.80	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.2794 + 2.4751 \log D_2$	19	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 2.0660 + 1.8089 \log D_2$	19	.85	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.5983 + 1.5402 \log D_2$	19	.79	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 3.0692 + 2.4868 \log D_2$	19	.99	2.5 – 15.0 (cm)
Birch					
Gray (Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.3679 + 1.5698 \log D_2$	30	.86	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.7349 + 1.6033 \log D_2$	30	.84	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.2137 + 2.4848 \log D_2$	30	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 1.8730 + 1.6376 \log D_2$	30	.87	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.4831 + 1.6163 \log D_2$	30	.81	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 2.9508 + 2.5139 \log D_2$	30	.99	2.5 – 15.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Birch					
White (paper) (Baskerville, 1965)					
Tree	FW-lbs	$\log Y = 0.736 + 2.17 \log D_1$	24	.96	3 – 9 (cm)
Tree	ODW-lbs	$\log Y = 0.236 + 2.48 \log D_1$	24	.98	3 – 9 (cm)
Stem wood	ODW-lbs	$\log Y = 0.312 + 2.36 \log D_1$	24	.97	3 – 9 (cm)
Stem bark	ODW-lbs	$\log_{100} Y = 1.32 + 2.35 \log D_1$	24	.90	3 – 9 (cm)
Branches	ODW-lbs	$\log Y = -1.006 + 3.30 \log D_1$	24	.86	3 – 9 (cm)
Foliage	ODW-lbs	$\log_{100} Y = 0.730 + 2.94 \log D_1$	25	.90	3 – 9 (cm)
Dead Branches	ODW-lbs	$\log_{100} Y = 0.679 + 3.30 \log D_1$	20	.68	3 – 9 (cm)
Birch					
White (paper) (Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.6161 + 1.6161 \log D_2$	30	.89	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.6961 + 1.6886 \log D_2$	30	.88	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 2.7167 + 3.2104 \log D_2$	30	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 2.1587 + 1.7020 \log D_2$	30	.89	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.4059 + 1.7304 \log D_2$	30	.88	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 2.4481 + 3.2640 \log D_2$	30	.99	2.5 – 15.0 (cm)
Birch					
White (paper) (Young et al. 1964)					
Tree tot.	FW-lbs	$\ln Y = .8025 + 2.2234 \ln D_1 + .3390 \ln H_1$	17	.97	15.3 – 29.0 (cm)
Tree tot.	ODW-lbs	42% of FW from above equation	17	.97	15.3 – 29.0 (cm)
Tree tot. – roots <4"	FW-lbs	$\ln Y = .6040 + 2.2236 \ln D_1 + .3635 \ln H_1$	17	.98	15.3 – 29.0 (cm)
Tree tot. – roots <4"	ODW-lbs	43% of FW from above equation	17	.98	15.3 – 29.0 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = .3062 + 2.1679 \ln D_1 + .4292 \ln H_1$	17	.97	15.3 – 29.0 (cm)
Tree a.s. 6"	ODW-lbs	42% of FW from above equation	17	.97	15.3 – 29.0 (cm)
Stem a.s. 6"	FW-lbs	$\ln Y = -1.3721 + 1.8801 \ln D_1 + .9332 \ln H_1$	17	.98	15.3 – 29.0 (cm)
Stem a.s. 6"	ODW-lbs	48% of FW from above equation	17	.98	15.3 – 29.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Birch					
White (paper) (Young et al. 1964) .... cont'd					
Bole a.s. 6", t 4"	FW-lbs	$\ln Y = -1.8959 + 2.0215 \ln D_1 + .9670 \ln H_1$	17	.98	15.3 – 29.0 (cm)
Bole a.s. 6", t 4"	ODW-lbs	48% of FW from above equation	17	.98	15.3 – 29.0 (cm)
All branches	FW-lbs	$\ln Y = 8.6990 + 5.1205 \ln D_1 - 3.5493 \ln H_1$	17	.69	15.3 – 29.0 (cm)
All branches	ODW-lbs	20% of FW from above equation	17	.69	15.3 – 29.0 (cm)
Branches < 1"	FW-lbs	$\ln Y = 5.5076 + 3.5204 \ln D_1 - 2.0449 \ln H_1$	17	.61	15.3 – 29.0 (cm)
Branches < 1"	ODW-lbs	13% of FW from above equation	17	.61	15.3 – 29.0 (cm)
Stump 6" & roots > 1"	FW-lbs	$\ln Y = 3.8968 + 3.0243 \ln D - 1.2598 \ln H_1$	17	.76	15.3 – 29.0 (cm)
Stump 6" & roots > 1"	ODW-lbs	48% of FW from above equation	17	.76	15.3 – 29.0 (cm)
Roots > 1"	FW-lbs	$\ln Y = 5.5082 + 3.2590 \ln D_1 - 1.8989 \ln H_1$	17	.65	15.3 – 29.0 (cm)
Roots > 1"	ODW-lbs	44% of FW from above equation	17	.65	15.3 – 29.0 (cm)
Roots < 1"	FW-lbs	$\ln Y = -1.2539 + 1.6306 \ln D_1 + .3564 \ln H_1$	17	.46	15.3 – 29.0 (cm)
Roots < 1"	ODW-lbs	25% of FW from above equation	17	.46	15.3 – 29.0 (cm)
Birch					
White (paper) (Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 1.310 + 2.004 \ln H_1$	10	.97	0 – 75 (mm)
Branches	FW-g	$\ln Y = 0.311 + 2.312 \ln H_1$	10	.97	0 – 75 (mm)
Stem	FW-g	$\ln Y = -0.066 + 2.892 \ln H_1$	10	.99	0 – 75 (mm)
Roots	FW-g	$\ln Y = 0.181 + 2.431 \ln H_1$	10	.97	0 – 75 (mm)
Tree tot.	FW-g	$\ln Y = 1.900 + 2.473 \ln H_1$	10	.98	0 – 75 (mm)
Foliage	ODW-g	$\ln Y = -0.007 + 2.116 \ln H_1$	10	.97	0 – 75 (mm)
Branches	ODW-g	$\ln Y = -0.157 + 2.276 \ln H_1$	10	.97	0 – 75 (mm)
Stem	ODW-g	$\ln Y = -0.212 + 2.739 \ln H_1$	10	.98	0 – 75 (mm)
Roots	ODW-g	$\ln Y = -0.263 + 2.375 \ln H_1$	10	.97	0 – 75 (mm)
Tree tot.	ODW-g	$\ln Y = 1.183 + 2.492 \ln H_1$	10	.98	0 – 75 (mm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Birch					
Yellow (Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.4488 + 1.8961 \log D_2$	30	.90	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.7713 + 1.6306 \log D_2$	30	.90	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.1837 + 2.5206 \log D_2$	30	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 1.9962 + 1.9683 \log D_2$	30	.90	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.5345 + 1.6179 \log D_2$	30	.89	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 2.9670 + 2.5330 \log D_2$	30	.99	2.5 – 15.0 (cm)
Blueberry					
Lowbush (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.978 + 3.706 \ln D_4$	20	.94	1.4 – 5.6 (mm)
Foliage	ODW-g	$\ln Y = -4.404 + 3.034 \ln D_4$	20	.74	1.4 – 5.6 (mm)
Blueberry					
Lowbush (Whittaker and Woodwell, 1968)					
Stem	ODW-g	$\log Y = 1.2758 + 2.9605 \log D_5$	15	.85 (r)	No data available
Stem wood	ODW-g	$\log Y = 1.1773 + 3.1513 \log D_5$	15	.83 (r)	No data available
Stem bark	ODW-g	$\log Y = 0.7705 + 2.8065 \log D_5$	15	.81 (r)	No data available
Branches	ODW-g	$\log Y = 1.1999 + 2.6115 \log D_5$	15	.86 (r)	No data available
Tree	ODW-g	$\log Y = 1.6937 + 2.4995 \log D_5$	15	.87 (r)	No data available
Cedar					
Northern White (large) (Dyer, 1967)					
Tree tot.	FW-lbs	$\log Y = -2.07 + 1.59 \log D_1 + 1.29 \log H_1$	21	.90	14.0 (cm)
Tree tot. – Roots < 4"	FW-lbs	$\log Y = -2.04 + 1.62 \log D_1 + 1.25 \log H_1$	21	.91	14.0 (cm)
Tree	FW-lbs	$\log Y = -2.63 + 1.53 \log D_1 + 1.41 \log H_1$	21	.90	14.0 (cm)
Stem	FW-lbs	$\log Y = -3.94 + 1.46 \log D_1 + 1.71 \log H_1$	21	.93	14.0 (cm)
Bole, s?, t?	FW-lbs	$\log Y = -5.44 + 1.56 \log D_1 + 2.01 \log H_1$	21	.95	14.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Cedar (Northern White (large) (Dyer, 1967) .... cont'd					
Stump ? & Roots > 1"	FW-lbs	$\log Y = -1.96 + 1.90 \log D_1 + 0.61 \log H_1$	21	.89	14.0 (cm)
Roots > 1"	FW-lbs	$\log Y = -4.39 + 1.78 \log D_1 + 1.18 \log H_1$	21	.77	14.0 (cm)
Roots < 1"	FW-lbs	$\log Y = -7.96 + 1.31 \log D_1 + 2.06 \log H_1$	21	.55	14.0 (cm)
Tree tot.	ODW-lbs	$\log Y = -3.29 + 1.53 \log D_1 + 1.40 \log H_1$	21	.92	14.0 (cm)
Tree tot. – Roots < 4"	ODW-lbs	$\log Y = -3.30 + 1.53 \log D_1 + 1.39 \log H_1$	21	.93	14.0 (cm)
Tree	ODW-lbs	$\log Y = -3.97 + 1.41 \log D_1 + 1.59 \log H_1$	21	.91	14.0 (cm)
Stem	ODW-lbs	$\log Y = -4.62 + 1.29 \log D_1 + 1.79 \log H_1$	21	.92	> 14.0 (cm)
Bole, s?, t?	ODW-lbs	$\log Y = -6.02 + 1.39 \log D_1 + 2.06 \log H_1$	21	.95	> 14.0 (cm)
Stump ? & Roots > 1"	ODW-lbs	$\log Y = -2.81 + 2.00 \log D_1 + 0.54 \log H_1$	21	.90	> 14.0 (cm)
Roots > 1"	ODW-lbs	$\log Y = -5.70 + 1.96 \log D_1 + 1.51 \log H_1$	21	.79	> 14.0 (cm)
Roots < 1"	ODW-lbs	$\log Y = -8.82 + 1.84 \log D_1 + 1.52 \log H_1$	21	.51	> 14.0 (cm)
Cedar Northern White (small) (Dyer, 1967)					
Foliage	FW-g	$\log Y = 2.58 + 2.03 \log H_1$	36	.94	< 14.0 (cm)
Foliage	ODW-g	$\log Y = 1.59 + 2.07 \log H_1$	36	.94	< 14.0 (cm)
Branches	FW-g	$\log Y = 1.20 + 2.40 \log H_1$	36	.90	< 14.0 (cm)
Branches	ODW-g	$\log Y = 0.59 + 2.37 \log H_1$	36	.89	< 14.0 (cm)
Stem	FW-g	$\log Y = 0.59 + 2.98 \log H_1$	36	.97	< 14.0 (cm)
Stem	ODW-g	$\log Y = -0.32 + 3.07 \log H_1$	36	.95	< 14.0 (cm)
Roots	FW-g	$\log Y = 1.31 + 2.46 \log H_1$	36	.94	< 14.0 (cm)
Roots	ODW-g	$\log Y = 0.60 + 2.40 \log H_1$	36	.93	< 14.0 (cm)
Tree tot.	FW-g	$\log Y = 3.02 + 2.41 \log H_1$	36	.96	< 14.0 (cm)
Tree tot.	ODW-g	$\log Y = 2.21 + 2.42 \log H_1$	36	.96	< 14.0 (cm)

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SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Cedar					
Northern White					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 2.578 + 2.026 \ln H_1$	34	.94	2.5 – 10.0 (cm)
Branches	FW-g	$\ln Y = 1.205 + 2.404 \ln H_1$	34	.90	2.5 – 10.0 (cm)
Stem	FW-g	$\ln Y = 0.595 + 2.986 \ln H_1$	34	.97	2.5 – 10.0 (cm)
Roots	FW-g	$\ln Y = 1.311 + 2.455 \ln H_1$	34	.94	2.5 – 10.0 (cm)
Tree tot.	FW-g	$\ln Y = 3.022 + 2.409 \ln H_1$	34	.96	2.5 – 10.0 (cm)
Foliage	ODW-g	$\ln Y = 1.594 + 2.073 \ln H_1$	34	.95	2.5 – 10.0 (cm)
Branches	ODW-g	$\ln Y = 0.587 + 2.371 \ln H_1$	34	.89	2.5 – 10.0 (cm)
Stem	ODW-g	$\ln Y = -0.321 + 3.074 \ln H_1$	34	.95	2.5 – 10.0 (cm)
Roots	ODW-g	$\ln Y = 0.605 + 2.400 \ln H_1$	34	.93	2.5 – 10.0 (cm)
Tree tot.	ODW-g	$\ln Y = 2.213 + 2.421 \ln H_1$	34	.96	2.5 – 10.0 (cm)
Cedar					
Western Red					
(Kurucz, 1961)					
Tree	ODW-lbs	$Y = 0.037297\ D_6$	113	.90	2.5 – 120 (cm)
Stem - wood	ODW-lbs	$Y = 0.028292\ D_6$	113	.90	2.5 – 120 (cm)
Stem - bark	ODW-lbs	$Y = 0.003928\ D_6$	113	.93	2.5 – 120 (cm)
Crown	ODW-lbs	$Y = 0.301496\ DC_1 + 0.000072\ DC_2$	113	.79	2.5 – 120 (cm)
Branches > 3/4 in	ODW-lbs	$Y = 0.099398\ DC_1 + 0.000056\ DC_2$	113	.77	2.5 – 120 (cm)
Branches ¼ - 3/4 in	ODW-lbs	$Y = 0.029247\ DC_1 + 0.000008\ DC_2$	113	.78	2.5 – 120 (cm)
Branches < ¼ in	ODW-lbs	$Y = 0.022392\ DC_1 + 0.000002\ DC_2$	113	.82	2.5 – 120 (cm)
Foliage	ODW-lbs	$Y = 0.150460\ DC_1 + 0.000006\ DC_2$	113	.81	2.5 – 120 (cm)
Cherry					
Choke					
(Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.4389 + 1.2857 \log D_2$	16	.60	2.5 – 7.5 (cm)
Branches	FW-g	$\log Y = 2.7898 + 1.2164 \log D_2$	16	.57	2.5 – 7.5 (cm)
Stem	FW-g	$\log Y = 3.0997 + 1.9898 \log D_2$	16	.84	2.5 – 7.5 (cm)

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Cherry					
Choke					
(Ribe, 1973)					
.... cont'd					
Foliage	ODW-g	$\log Y = 2.0526 + 1.3307 \log D_2$	16	.60	2.5 – 7.5 (cm)
Branches	ODW-g	$\log Y = 2.5540 + 1.2191 \log D_2$	16	.56	2.5 – 7.5 (cm)
Stem	ODW-g	$\log Y = 2.8760 + 2.0038 \log D_2$	16	.85	2.5 – 7.5 (cm)
Cherry					
Pin					
(Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.5825 + 1.9060 \log D_2$	30	.90	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.7161 + 1.8263 \log D_2$	30	.88	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.2025 + 2.1947 \log D_2$	30	.98	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 2.0974 + 1.9784 \log D_2$	30	.90	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.4033 + 1.8755 \log D_2$	30	.87	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 2.9117 + 2.2988 \log D_2$	30	.98	2.5 – 15.0 (cm)
Fern					
Sweet					
(Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.831 + 3.314 \ln D_4$	20	.97	2.1 – 14.8 (mm)
Foliage	ODW-g	$\ln Y = -4.331 + 3.014 \ln D_4$	20	.97	2.1 – 14.8 (mm)
Fern					
Bracken					
(Stanek and State, 1978)					
Tree	ODW-g/m^2	$Y = 1.02\ V + .009\ V^2$	65	.91	– – –
Tree	ODW-g/m^2	$Y = 10.55\ ME$	35	.84	– – –
Fir					
Amabilis (Pacific Silver)					
(Krumlik and Kimmins, 1973)					
Tree, a.s. 30 cm	ODW-kg	$Y = 168.704 + 116.779\ D_7$	7	.99	31.0 – 90.4 (cm)
Stem, a.s. 30 cm, wood	ODW-kg	$Y = 80.824 + 90.478\ D_7$	7	.99	31.0 – 90.4 (cm)
Stem, a.s. 30 cm, bark	ODW-kg	$Y = -42.324 + 1052.280\ BA$	7	.95	31.0 – 90.4 (cm)

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SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Fir					
Amabilis (Pacific Silver) (Krumlik and Kimmins, 1973) .... cont'd					
Branches, > 2.5 cm	ODW-kg	$Y = -202.413 + 620.411\ D_3$	7	.80	31.0 – 90.4 (cm)
Branches, 0.6 - 2.5 cm	ODW-kg	$Y = 13.632 + 2.784\ D_3CL_m$	7	.85	31.0 – 90.4 (cm)
Branches, < 0.6 & foliage	ODW-kg	$Y = -2.995 + 8.696\ D_3CL_m$	7	.95	31.0 – 90.4 (cm)
Tree, a.s. 30 cm	ODW-kg	$\log Y = 2.231 + 0.907 \log D_7$	7	.99	31.0 – 90.4 (cm)
Stem, a.s. 30 cm, wood	ODW-kg	$\log Y = 2.047 + 0.953 \log D_7$	7	.99	31.0 – 90.4 (cm)
Stem, a.s. 30 cm, bark	ODW-kg	$\log Y = 3.096 + 1.327 \log BA$	7	.95	31.0 – 90.4 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 2.665 + 2.493 \log D_3$	7	.92	31.0 – 90.4 (cm)
Branches, 0.6 – 2.5 cm	ODW-kg	$\log Y = 0.861 + 0.760 \log D_3CL_m$	7	.95	31.0 – 90.4 (cm)
Branches, < 0.6 cm & foliage	ODW-kg	$\log Y = 0.879 + 1.038 \log D_3CL_m$	7	.97	31.0 – 90.4 (cm)
Fir					
Amabilis (Pacific Silver) (Krumlik, 1974)					
Tree, a.s. 30.5 cm	ODW-kg	$Y = 176.567 + 128.139\ D_7$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm t. 2.5 cm, wood	ODW-kg	$Y = 80.324 + 90.478\ D_7$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm t. 2.5 cm, bark	ODW-kg	$Y = 17.753 + 18.763\ D_7$	7	.96	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = 1.041 + 11.625\ D_7$	7	.80	15.24 – 76.20 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$Y = -2029.050 + 6775.640\ D_3$	7	.97	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = -1467.720 + 4769.210\ D_3$	7	.97	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -202.413 + 620.411\ D_3$	7	.80	15.24 – 76.20 (cm)
Branches, .64 - 2.5 cm	ODW-kg	$Y = -7.558 + 103.675\ D_3$	7	.86	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -64.847 + 316.410\ D_3$	7	.91	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = 13.632 + 2.784\ D_3CL_m$	7	.85	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -2.995 + 8.696\ D_3CL_m$	7	.95	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = -213.497 + 5089.520\ BA$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$Y = -42.324 + 1052.280\ BA$	7	.95	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -39.770 + 663.778\ BA$	7	.82	15.24 – 76.20 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Fir					
Amabilis (Pacific Silver) (Krumlik, 1974) .... cont'd					
Branches, < .64 cm & foliage	ODW-kg	$Y = 21.947 + 325.859\ BA$	7	.87	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = 22.025 + 0.490\ BA\ H_3CL_m$	7	.76	15.24 – 76.20 (cm)
Branches < .64 cm & foliage	ODW-kg	$Y = 50.450 + 0.247\ BA\ H_3CL_m$	7	.85	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = 0.950 + 0.299\ (BA\ H_3) + (CL_mCW_m)$	7	.81	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -39.661 + 0.918\ (BA\ H_3) + (CL_mCW_m)$	7	.87	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = -24.609 + 3.472\ CL_m$	7	.80	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -118.107 + 10.651\ CL_m$	7	.86	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = -1.833 + 0.211\ CS$	7	.79	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = -28.944 + 2.660\ H_3$	7	.88	15.24 – 76.20 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$\log Y = 2.279 + 0.899 \log D_7$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 2.047 + 0.953 \log D_7$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 1.346 + 0.967 \log D_7$	7	.96	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 1.169 + 0.890 \log D_7$	7	.89	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 1.218 + 0.481 \log D_7$	7	.92	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 1.374 + 0.648 \log D_7$	7	.92	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 0.631 + 0.771 \log D_7\ CW_m$	7	.86	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.918 + 0.421 \log D_7\ CW_m$	7	.91	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.983 + 0.561 \log D_7\ CW_m$	7	.89	15.24 – 76.20 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$\log Y = 3.779 + 2.473 \log D_3$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 3.636 + 2.618 \log D_3$	7	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 2.957 + 2.654 \log D_3$	7	.95	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 2.665 + 2.493 \log D_3$	7	.92	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 2.019 + 1.317 \log D_3$	7	.91	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 2.457 + 1.789 \log D_3$	7	.92	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.861 + 0.760 \log D_3CL_m$	7	.95	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.879 + 1.038 \log D_3CL_m$	7	.97	15.24 – 76.20 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Fir					
Amabilis (Pacific Silver) (Krumlik, 1974) .... cont'd					
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.423 + 0.521 \log D_3 (CL_m)^2$	7	.95	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.276 + 0.713 \log D_3 (CL_m)^2$	7	.97	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 3.096 + 1.327 \log BA$	7	.95	15.24 – 76.20 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = -1.002 + 1.133 \log CS$	7	.90	15.24 – 76.20 (cm)
Fir					
Balsam (Baskerville, 1965)					
Tree	FW-lbs	$\log Y = 0.343 + 2.68 \log D_1$	98	.99 (r)	2.5 – 25.0 (cm)
Tree	ODW-lbs	$\log Y = 0.086 + 2.53 \log D_1$	101	.96 (r)	2.5 – 25.0 (cm)
Stem wood	ODW-lbs	$\log Y = 0.062 + 2.28 \log D_1$	101	.96 (r)	2.5 – 25.0 (cm)
Stem bark	ODW-lbs	$\log Y = -0.916 + 2.47 \log D_1$	101	.95 (r)	2.5 – 25.0 (cm)
Branches	ODW-lbs	$\log Y = -1.294 + 3.22 \log D_1$	101	.95 (r)	2.5 – 25.0 (cm)
Foliage	ODW-lbs	$\log Y = -1.258 + 3.21 \log D_1$	101	.98 (r)	2.5 – 25.0 (cm)
Cones (Dom. & Codom. only)	ODW-lbs	$\log_{100} Y = -0.625 + 3.20 \log D_1$	35	.70 (r)	10 – 25 (cm)
Dead branches	ODW-lbs	$\log_{10} Y = 0.226 + 2.11 \log D_1$	90	.80 (r)	2.5 – 25.0 (cm)
Fir					
Balsam (open grown) (Honer, 1971)					
Stem, s 6", wood	ODW-lbs	$\ln Y = -2.0029 + 1.6430 \ln D_1 + 0.8823 \ln H_1$	40	.99	2.5 – 40.0 (cm)
Stem, s 6", bark	ODW-lbs	$\ln Y = -1.3735 + 2.1140 \ln D_1$	40	.98	2.5 – 40.0 (cm)
Stem, s 6", wood and branch wood (1-3")	ODW-lbs	$\ln Y = -0.0501 + 2.2921 \ln D_1$	40	.99	2.5 – 40.0 (cm)
Foliage	ODW-lbs	$\ln Y = 0.4408 + 1.7853 \ln D_1$	40	.97	2.5 – 40.0 (cm)
Tree, s 6"	ODW-lbs	$\ln Y = 1.3479 + 2.0543 \ln D_1$	40	.99	2.5 – 40.0 (cm)
Roots and stump s 6"	ODW-lbs	$\ln Y = 0.0035 + 2.0027 \ln D_1$	40	.93	2.5 – 40.0 (cm)
Tree tot.	ODW-lbs	$\ln Y = 1.6067 + 2.0344 \ln D_1$	40	.98	2.5 – 40.0 (cm)
Branch wood, bark, twigs	ODW-lbs	$\ln Y = 0.0707 + 2.0964 \ln D_1$	40	.98	2.5 – 40.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Fir					
Balsam (forest grown) (Honer, 1971)					
Stem, s 6", wood	ODW-lbs	$\ln Y = -4.3020 + 1.6350 \ln D_1 + 1.4934 \ln H_1$	40	.99	2.5 – 40.0 (cm)
Stem, s 6", bark	ODW-lbs	$\ln Y = -5.7100 + 1.8333 \ln D_1 + 1.3178 \ln H_1$	40	.94	2.5 – 40.0 (cm)
Stem, s 6", wood and branch wood (1-3")	ODW-lbs	$\ln Y = -4.1291 + 1.6997 \ln D_1 + 1.4210 \ln H_1$	40	.99	2.5 – 40.0 (cm)
Foliage	ODW-lbs	$\ln Y = 5.4899 + 3.5856 \ln D_1 - 2.3816 \ln H_1$	40	.69	2.5 – 40.0 (cm)
Tree, s 6"	ODW-lbs	$\ln Y = 0.4441 + 2.4975 \ln D_1$	40	.97	2.5 – 40.0 (cm)
Roots and stump, s 3"	ODW-lbs	$\ln Y = -1.0678 + 2.4613 \ln D_1$	40	.90	2.5 – 40.0 (cm)
Tree tot.	ODW-lbs	$\ln Y = 0.6538 + 2.4872 \ln D_1$	40	.97	2.5 – 40.0 (cm)
Branch wood, bark and twigs	ODW-lbs	$\ln Y = 5.6263 + 4.4912 \ln D_1 - 2.7786 \ln H_1$	40	.78	2.5 – 40.0 (cm)
Fir					
Balsam (Keen, 1963)					
Bole, s*, t 3", wood	FW-lbs	$\log Y = 0.108 + 2.673 \log D_1$	64	.95 (r)	10.0 – 40.0 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = 0.212 + 2.650 \log D_1$	201	.96 (r)	10.0 – 40.0 (cm)
Tree, s*	FW-lbs	$\log Y = 0.639 + 2.382 \log D_1$	138	.97 (r)	10.0 – 40.0 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = -0.7809 + 2.021 \log D_1 + 0.919 \log H_1$	192	.98 (r)	10.0 – 40.0 (cm)
Bole, s*, t 3" (* = D_1)	FW-lbs	$\log Y = -0.7494 + 1.983 \log D_1 + 0.879 \log H_1$	64	.98 (r)	10.0 – 40.0 (cm)
Slash	FW-lbs	$\log Y = 0.610 + 1.872 \log D_1$	138	.86 (r)	10.0 – 40.0 (cm)
Fir					
Balsam (Young et al., 1964)					
Tree tot.	FW-lbs	$\ln Y = .5882 + 2.2234 \ln D_1 + .3390 \ln H_1$	23	.97	15.5 – 33.5 (cm)
Tree tot.	ODW-lbs	22% of FW from above equation	23	.97	15.5 – 33.5 (cm)
Tree tot. – Roots <4"	FW-lbs	$\ln Y = -.0260 + 2.0530 \ln D_1 + .5656 \ln H_1$	23	.97	15.5 – 33.5 (cm)
Tree tot. – Roots <4"	ODW-lbs	23% of FW from above equation	23	.97	15.5 – 33.5 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = .0511 + 2.1679 \ln D_1 + .4292 \ln H_1$	23	.96	15.5 – 33.5 (cm)
Tree a.s. 6"	ODW-lbs	21% of FW from above equation	23	.96	15.5 – 33.5 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Fir					
Balsam					
(Young et al., 1964)					
.... cont'd					
Stem a.s. 6"	FW-lbs	$\ln Y = 1.5589 + 1.8801 \ln D_1 + .9332 \ln H_1$	23	.98	15.5 – 33.5 (cm)
Stem a.s. 6"	ODW-lbs	33% of FW from above equation	23	.98	15.5 – 33.5 (cm)
Bole a.s. 6", t. 4"	FW-lbs	$\ln Y = -2.0858 + 2.0215 \ln D_1 + .9670 \ln H_1$	23	.98	15.5 – 33.5 (cm)
Bole a.s. 6", t. 4"	ODW-lbs	33% of FW from above equation	23	.98	15.5 – 33.5 (cm)
All branches	FW-lbs	$\ln Y = 2.2870 + 3.2160 \ln D_1 - 1.0895 \ln H_1$	23	.85	15.5 – 33.5 (cm)
All branches	ODW-lbs	8% of FW from above equation	23	.85	15.5 – 33.5 (cm)
Branches < 1"	FW-lbs	$\ln Y = 1.9971 + 2.7950 \ln D_1 - .8048 \ln H_1$	23	.82	15.5 – 33.5 (cm)
Branches < 1"	ODW-lbs	7% of FW from above equation	23	.82	15.5 – 33.5 (cm)
Stump 6" and roots > 1"	FW-lbs	$\ln Y = .3669 + 2.6447 \ln D_1 - .2645 \ln H_1$	23	.92	15.5 – 33.5 (cm)
Stump 6" and roots > 1"	ODW-lbs	30% of FW from above equation	23	.92	15.5 – 33.5 (cm)
Roots > 1"	FW-lbs	$\ln Y = .8681 + 2.7785 \ln D_1 - .5456 \ln H_1$	23	.92	15.5 – 33.5 (cm)
Roots > 1"	ODW-lbs	28% of FW from above equation	23	.92	15.5 – 33.5 (cm)
Roots < 1"	FW-lbs	$\ln Y = -1.1186 + 1.6306 \ln D_1 + .3564 \ln H_1$	23	.50	15.5 – 33.5 (cm)
Roots < 1"	ODW-lbs	12% of FW from above equation	23	.50	15.5 – 33.5 (cm)
Fir					
Balsam					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 3.141 + 1.963 \ln H_1$	14	.95	0.0 – 75 (mm)
Branches	FW-g	$\ln Y = 2.476 + 1.948 \ln H_1$	14	.93	0.0 – 75 (mm)
Stem	FW-g	$\ln Y = 1.095 + 2.871 \ln H_1$	14	.95	0.0 – 75 (mm)
Roots	FW-g	$\ln Y = 2.332 + 2.165 \ln H_1$	14	.94	0.0 – 75 (mm)
Tree tot.	FW-g	$\ln Y = 3.909 + 2.160 \ln H_1$	14	.97	0.0 – 75 (mm)
Foliage	ODW-g	$\ln Y = 2.324 + 1.941 \ln H_1$	14	.95	0.0 – 75 (mm)
Branches	ODW-g	$\ln Y = 1.851 + 1.934 \ln H_1$	14	.93	0.0 – 75 (mm)
Stem	ODW-g	$\ln Y = 2.273 + 2.893 \ln H_1$	14	.94	0.0 – 75 (mm)
Roots	ODW-g	$\ln Y = 1.569 + 2.122 \ln H_1$	14	.93	0.0 – 75 (mm)
Tree tot.	ODW-g	$\ln Y = 3.147 + 2.145 \ln H_1$	14	.96	0.0 – 75 (mm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Fir					
Douglas					
(Kurucz, 1969)					
Tree	ODW-lbs	$Y = 0.059265\ D_6$	112	.96	2.5 – 20.0 (cm)
Stem - wood	ODW-lbs	$Y = 0.044119\ D_6$	112	.98	2.5 – 20.0 (cm)
Stem - bark	ODW-lbs	$Y = 0.007908\ D_6$	112	.98	2.5 – 20.0 (cm)
Crown	ODW-lbs	$Y = 0.080017\ DC_3$	112	.59	2.5 – 20.0 (cm)
Branches > 3/4 in	ODW-lbs	$Y = 0.048776\ DC_3$	112	.58	2.5 – 20.0 (cm)
Branches ¼ - 3/4 in	ODW-lbs	$Y = 0.006931\ DC_3$	112	.61	2.5 – 20.0 (cm)
Branches < ¼ in	ODW-lbs	$Y = 0.007999\ DC_3$	112	.58	2.5 – 20.0 (cm)
Foliage	ODW-lbs	$Y = 0.016310\ DC_3$	112	.56	2.5 – 20.0 (cm)
Fir					
Subalpine					
(Kimmins, 1974)					
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 1.467 + 1.63 \log D_3 + 1.299 \log H_3$	8	.99	14.1 – 60.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 0.454 + 1.336 \log D_3 + 1.476 \log H_3$	8	.99	14.1 – 60.0 (cm)
Branches > 2.5 cm	ODW-kg	$\log Y = 9.960 + 7.882 \log D_3 - 3.713 \log H_3$	8	.83	14.1 – 60.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 1.555 - 1.216 \log D_3CL_m + 0.104 \log D_3CL_m$	8	.66	14.1 – 60.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 3.767 + 1.893 \log D_3 - 0.859 \log H_3$	8	.89	14.1 – 60.0 (cm)
Hemlock					
sp.					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 2.197 + 2.147 \ln H_1$	9	.98	0.0 – 75 (mm)
Branches	FW-g	$\ln Y = 1.374 + 2.306 \ln H_1$	9	.97	0.0 – 75 (mm)
Stem	FW-g	$\ln Y = -1.345 + 3.605 \ln H_1$	9	.94	0.0 – 75 (mm)
Roots	FW-g	$\ln Y = 1.229 + 2.448 \ln H_1$	9	.98	0.0 – 75 (mm)
Tree tot.	FW-g	$\ln Y = 2.789 + 2.476 \ln H_1$	9	.98	0.0 – 75 (mm)
Foliage	ODW-g	$\ln Y = 1.266 + 2.192 \ln H_1$	9	.98	0.0 – 75 (mm)
Branches	ODW-g	$\ln Y = 0.779 + 2.320 \ln H_1$	9	.98	0.0 – 75 (mm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock sp. (Young and Carpenter, 1967) .... cont'd					
Stem	ODW-g	$\ln Y = -1.414 + 3.343 \ln H_1$	9	.94	0.0 – 75 (mm)
Roots	ODW-g	$\ln Y = 0.549 + 2.405 \ln H_1$	9	.98	0.0 – 75 (mm)
Tree tot.	ODW-g	$\ln Y = 2.035 + 2.476 \ln H_1$	9	.98	0.0 – 75 (mm)
Hemlock Eastern (Young et al., 1964)					
Tree tot.	FW-lbs	$\ln Y = .6277 + 2.2234 \ln D_1 + .3390 \ln H_1$	28	.98	14.0 – 37.8 (cm)
Tree tot.	ODW-lbs	31% of FW from above equation	28	.98	14.0 – 37.8 (cm)
Tree tot. – Roots <4"	FW-lbs	$\ln Y = -.3640 + 2.0634 \ln D_1 + .6564 \ln H_1$	28	.98	14.0 – 37.8 (cm)
Tree tot. – Roots <4"	ODW-lbs	32% of FW from above equation	28	.98	14.0 – 37.8 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = .1798 + 2.1679 \ln D_1 + .4292 \ln H_1$	28	.98	14.0 – 37.8 (cm)
Tree a.s. 6"	ODW-lbs	31% of FW from above equation	28	.98	14.0 – 37.8 (cm)
Stem a.s. 6"	FW-lbs	$\ln Y = -1.5128 + 1.8801 \ln D_1 + .9332 \ln H_1$	28	.83	14.0 – 37.8 (cm)
Stem a.s. 6"	ODW-lbs	38% of FW from above equation	28	.83	14.0 – 37.8 (cm)
Bole a.s. 6", t. 4"	FW-lbs	$\ln Y = -2.0319 + 2.0215 \ln D_1 + .9670 \ln H_1$	28	.98	14.0 – 37.8 (cm)
Bole a.s. 6", t. 4"	ODW-lbs	38% of FW from above equation	28	.98	14.0 – 37.8 (cm)
All branches	FW-lbs	$\ln Y = 2.1610 + 2.8863 \ln D_1 - .8043 \ln H_1$	28	.89	14.0 – 37.8 (cm)
All branches	ODW-lbs	14% of FW from above equation	28	.89	14.0 – 37.8 (cm)
Branches < 1 in	FW-lbs	$\ln Y = 1.7234 + 2.3289 \ln D_1 - .4612 \ln H_1$	28	.80	14.0 – 37.8 (cm)
Branches < 1 in	ODW-lbs	10% of FW from above equation	28	.80	14.0 – 37.8 (cm)
Stump 6" and roots > 1 in	FW-lbs	$\ln Y = -2.7994 + 2.6523 \ln D_1 + .4997 \ln H_1$	28	.97	14.0 – 37.8 (cm)
Stump 6" and roots > 1 in	ODW-lbs	39% of FW from above equation	28	.97	14.0 – 37.8 (cm)
Roots > 1 in	FW-lbs	$\ln Y = -3.9057 + 2.6756 \ln D_1 + .6633 \ln H_1$	28	.95	14.0 – 37.8 (cm)
Roots > 1 in	ODW-lbs	40% of FW from above equation	28	.95	14.0 – 37.8 (cm)
Roots < 1 in	FW-lbs	$\ln Y = -1.4966 + 1.6306 \ln D_1 + .3564 \ln H_1$	28	.59	14.0 – 37.8 (cm)
Roots < 1 in	ODW-lbs	11% of FW from above equation	28	.59	14.0 – 37.8 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Mountain					
(Krumlik and Kimmins, 1973)					
Tree, a.s. 30 cm	ODW-kg	$Y = 386.715 + 117.631\ D_7$	5	.99	43.7 – 76.2 (cm)
Stem, a.s. 30 cm, wood	ODW-kg	$Y = 266.160 + 86.292\ D_7$	5	.99	43.7 – 76.2 (cm)
Stem, a.s. 30 cm, bark	ODW-kg	$Y = -15.193 + 1282.740\ BA$	5	.99	43.7 – 76.2 (cm)
Branches > 2.5 cm	ODW-kg	$Y = 22.048 + 1.378\ D_7CW_m$	5	.99	43.7 – 76.2 (cm)
Branches < .6 cm & foliage	ODW-kg	$Y = -20.637 + 9.679\ D_3CL_m$	5	.97	43.7 – 76.2 (cm)
Branches < .6 cm	ODW-kg	$Y = -18.780 + 4.700\ D_3CL_m$	5	.99	43.7 – 76.2 (cm)
Foliage	ODW-kg	$Y = -1.857 + 4.980\ D_3CL_m$	5	.88	43.7 – 76.2 (cm)
Tree, a.s. 30 cm	ODW-kg	$\log Y = 2.464 + .742 \log D_7$	5	.99	43.7 – 76.2 (cm)
Stem, a.s. 30 cm, wood	ODW-kg	$\log Y = 2.319 + .746 \log D_7$	5	.98	43.7 – 76.2 (cm)
Stem, a.s. 30 cm, bark	ODW-kg	$\log Y = 3.109 + 1.039 \log BA$	5	.98	43.7 – 76.2 (cm)
Branches > 2.5 cm	ODW-kg	$\log Y = 2.800 + 3.074 \log D_3$	5	.99	43.7 – 76.2 (cm)
Branches < .6 cm & foliage	ODW-kg	$\log Y = 0.567 + 1.297 \log D_3CL_m$	5	.96	43.7 – 76.2 (cm)
Branches < .6 cm	ODW-kg	$\log Y = -1.272 + 1.163 \log D_3 (CL_m)^2$	5	.99	43.7 – 76.2 (cm)
Foliage	ODW-kg	$\log Y = -0.537 + 0.936 \log D_3 (CL_m)^2$	5	.90	43.7 – 76.2 (cm)
Hemlock					
Mountain					
(Krumlik, 1974)					
Tree, a.s. 30.6 cm	ODW-kg	$Y = 366.484 + 131.667\ D_7$	5	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = 266.160 + 86.292\ D_7$	5	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$Y = 58.359 + 24.286\ D_7$	5	.97	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -32.176 + 14.498\ D_7$	5	.94	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = 50.185 + 5.564\ D_7$	5	.87	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$Y = 15.286 + 2.727\ D_7$	5	.91	15.24 – 76.20 (cm)
Foliage	ODW-kg	$Y = 34.899 + 2.837\ D_7$	5	.78	15.24 – 76.20 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$Y = -1904.550 + 6526.130\ D_3$	5	.98	15.24 – 76.20 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Mountain (Krumlik, 1974) .... cont'd					
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = -1194.950 + 4231.780\ D_3$	5	.95	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$Y = -369.519 + 1218.670\ D_3$	5	.98	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -290.516 + 732.353\ D_3$	5	.96	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -51.448 + 285.195\ D_3$	5	.92	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$Y = -34.157 + 139.157\ D_3$	5	.95	15.24 – 76.20 (cm)
Foliage	ODW-kg	$Y = -17.296 + 146.040\ D_3$	5	.83	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = 42.538 + 4430.220\ BA$	5	.95	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$Y = -15.193 + 1282.740\ BA$	5	.99	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -79.402 + 776.993\ BA$	5	.98	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = 33.897 + 291.988\ BA$	5	.88	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = 22.048 + 1.378\ D_7CW_m$	5	.99	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -.0586 + 0.504\ CV$	5	.97	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -20.637 + 9.679\ D_3CL_m$	5	.97	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$Y = -18.780 + 4.700\ D_3CL_m$	5	.99	15.24 – 76.20 (cm)
Foliage	ODW-kg	$Y = -1.857 + 4.980\ D_3CL_m$	5	.88	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = 53.070 + 0.277\ BA\ H_3CL_m$	5	.90	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$Y = 16.662 + 0.136\ BA\ H_3CL_m$	5	.94	15.24 – 76.20 (cm)
Foliage	ODW-kg	$Y = 36.408 + 0.141\ BA\ H_3CL_m$	5	.81	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = 22.995 + 0.574\ (BA\ H_3) + (CL_mCW_m)$	5	.84	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$Y = 0.143 + 0.292\ (BA\ H_3) + (CL_mCW_m)$	5	.94	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$Y = 0.027 + 0.196\ CS$	5	.93	15.24 – 76.20 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$\log Y = 2.469 + 0.769 \log D_7$	5	.99	15.24 – 76.20 (cm)
Bole, 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 1.701 + 0.778 \log D_7$	5	.98	15.24 – 76.20 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Mountain					
(Krumlik, 1974)					
.... cont'd					
Bole, a.s. 30.5 cm. t. 2.5 cm, wood	ODW-kg	$\log Y = 2.319 + 0.746 \log D_7$	5	.98	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 0.894 + 1.151 \log D_7$	5	.96	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.909 + 0.724 \log D_7$	5	.94	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.885 + 1.558 \log D_7 - 0.036 \log D_7$	5	.99	15.24 – 76.20 (cm)
Foliage	ODW-kg	$\log Y = 0.598 + 1.7174 \log D_7 + 0.045 \log D_7$	5	.98	15.24 – 76.20 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$\log Y = 3.733 + 2.016 \log D_3$	5	.99	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 3.544 + 1.947 \log D_3$	5	.97	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 3.000 + 2.078 \log D_3$	5	.98	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 2.800 + 3.074 \log D_3$	5	.99	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 2.434 + 1.651 \log D_3$	5	.88	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 2.099 + 1.895 \log D_3$	5	.93	15.24 – 76.20 (cm)
Foliage	ODW-kg	$\log Y = 2.168 + 1.486 \log D_3$	5	.80	15.24 – 76.20 (cm)
Bole, a.s. 30.5 cm, t.2.5 cm, bark	ODW-kg	$\log Y = 3.109 + 1.039 \log BA$	5	.98	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 1.291 + 0.005 \log (BA\ H_3) + (CL_m CW_m)$	5	.95	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.567 + 1.297 \log D_3 CL_m$	5	.96	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = -2.780 + 1.474 \log D_3 CL_m$	5	.99	15.24 – 76.20 (cm)
Foliage	ODW-kg	$\log Y = 0.478 + 1.176 \log D_3 CL_m$	5	.99	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = -0.542 + 1.029 \log D_3 (CL_m)^2$	5	.97	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = -1.272 + 1.163 \log D_3 (CL_m)^2$	5	.99	15.24 – 76.20 (cm)
Foliage	ODW-kg	$\log Y = -0.537 + 0.936 \log D_3 (CL_m)^2$	5	.90	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 0.647 + 0.785 \log D_7\ CW_m$	5	.99	15.24 – 76.20 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 1.290 + 0.415 \log D_7\ CW_m$	5	.86	15.24 – 76.20 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.122 + 0.971 \log D_7 CW_m - 0.003 \log D_7 CW_m$	5	.99	15.24 – 76.20 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 1.302 + 0.003 \log CS$	5	.95	15.24 – 76.20 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Western					
(Krumlik, 1974)					
Tree, a.s. 30.5 cm	ODW-kg	$Y = 79.458 + 136.626\ D_7$	8	.96	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = 48.856 + 90.959\ D_7$	8	.96	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$Y = -9.236 + 3342.380\ BA$	8	.98	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$Y = -10.054 + 879.140\ BA$	8	.94	15.24 – 127.0 (cm)
Foliage	ODW-kg	$Y = -1.002 + 279.218\ BA$	8	.86	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = 2.919 + 1.042\ BA\ H_3CL_m$	8	.88	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = 18.807 + 13.101\ BA\ H_3$	8	.71	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = 7.680 + 14.039\ BA\ H_3$	8	.85	15.24 – 127.0 (cm)
Foliage	ODW-kg	$Y = 3.595 + 9.803\ BA\ H_3$	8	.87	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$Y = -0.618 + 0.160\ (BA\ H_3) + (CL_mCW_m)$	8	.85	15.24 – 127.0 (cm)
Foliage	ODW-kg	$Y = -3.515 + 0.325\ (BA\ H_3) + (CL_mCW_m)$	8	.77	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -27.147 + 13.161\ D_3CL_m$	8	.92	15.24 – 127.0 (cm)
Branches, .64 – 2.4 cm	ODW-kg	$Y = 8.504 + 7.119\ D_3CL_m$	8	.76	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -2.601 + 7.480\ D_3CL_m$	8	.88	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$Y = 0.772 + 2.296\ D_3CL_m$	8	.79	15.24 – 127.0 (cm)
Foliage	ODW-kg	$Y = -3.340 + 5.176\ D_3CL_m$	8	.88	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = 1.759 + 2.554\ D_7CW_m$	8	.88	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = -18.780 + 3.565\ D_7 + CL_m$	8	.73	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -8.717 + 0.398\ CV$	8	.89	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = 8.385 + 0.222\ CV$	8	.82	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$Y = 3.468 + 0.074\ CV$	8	.86	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -30.646 + 0.544\ CS$	8	.87	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = 6.726 + 0.293\ CS$	8	.72	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -4.197 + 0.306\ CS$	8	.82	15.24 – 127.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Western (Krumlik, 1974) .... cont'd					
Branches, < .64 cm	ODW-kg	$Y = -0.633 + 0.101\ CS$	8	.85	15.24 – 127.0 (cm)
Foliage	ODW-kg	$Y = -3.530 + 0.205\ CS$	8	.77	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = -99.310 + 9.100\ CL_m$	8	.81	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -3.758 + 1.459\ CW_m^2$	8	.86	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$Y = -0.621 + 0.486\ CW_m^2$	8	.91	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$Y = -72.493 + 5.647\ H_3$	8	.87	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$Y = -82.759 + 5.695\ H3$	8	.93	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$Y = -23.751 + 1.74\ H_3$	8	.83	15.24 – 127.0 (cm)
Foliage	ODW-kg	$Y = -58.907 + 3.946\ H_3$	8	.94	15.24 – 127.0 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$\log Y = 2.304 + 0.845 \log D_7$	8	.99	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 0.825 + 1.570 \log D_7$	8	.77	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 1.427 + 0.620 \log D_7$	8	.90	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.125 + 0.774 \log D_7$	8	.92	15.24 – 127.0 (cm)
Foliage	ODW-kg	$\log Y = 0.951 + 1.022 \log D_7$	8	.92	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 0.072 + 1.231 \log D_7 CW_m$	8	.75	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.863 + 0.626 \log D_7 CW_m$	8	.96	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.560 + 0.451 \log D_7 CW_m$	8	.74	15.24 – 127.0 (cm)
Foliage	ODW-kg	$\log Y = 0.455 + 0.807 \log D_7 CW_m$	8	.92	15.24 – 127.0 (cm)
Tree, a.s. 30.5 cm	ODW-kg	$\log Y = 3.608 + 2.058 \log D_3$	8	.97	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 3.455 + 2.120 \log D_3$	8	.98	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 2.934 + 2.394 \log D_3$	8	.94	15.24 – 127.0 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 3.270 + 3.868 \log D_3$	8	.78	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 2.366 + 1.477 \log D_3$	8	.85	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 2.420 + 1.837 \log D_3$	8	.86	15.24 – 127.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Western					
(Krumlik, 1974)					
.... cont'd					
Foliage	ODW-kg	$\log Y = 2.508 + 2.454 \log D_3$	8	.89	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.936 + 1.007 \log D_3CL_m$	8	.91	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = 0.628 + 1.272 \log D_3CL_m$	8	.96	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.422 + 0.931 \log D_3CL_m$	8	.77	15.24 – 127.0 (cm)
Foliage	ODW-kg	$\log Y = -0.150 + 3.272 \log D_3CL_m - 0.144 \log D_3CL_m$	8	.97	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.317 + 0.697 \log D_3(CL_m)^2$	8	.86	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = -0.165 + 0.888 \log D_3(CL_m)^2$	8	.92	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = -0.213 + 0.679 \log D_3(CL_m)^2$	8	.80	15.24 – 127.0 (cm)
Foliage	ODW-kg	$\log Y = -0.816 + 1.114 \log D_3(CL_m)^2$	8	.84	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 2.112 + 0.370 \log D_7$	8	.99	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 1.415 + 0.996 \log D_7$	8	.97	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 1.177 + 0.499 \log D_7CW_m$	8	.93	15.24 – 127.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 3.060 + 1.197 \log BA$	8	.94	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.564 + 0.006 \log (BA\ H_3) + (CL_mCW_m)$	8	.83	15.24 – 127.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.406 + 0.602 \log CV$	8	.69	15.24 – 127.0 (cm)
Branches, < .64 cm & foliage	ODW-kg	$\log Y = -0.053 + 0.767 \log CV$	8	.74	15.24 – 127.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.563 + 0.003 \log CS$	8	.83	15.24 – 127.0 (cm)
Hemlock					
Western					
(Krumlik and Kimmins, 1973)					
Tree, a.s. 30 cm	ODW-kg	$Y = 79.458 + 136.626\ D_7$	8	.96	16.0 – 49.0 (cm)
Stem, a.s. 30 cm, wood	ODW-kg	$Y = 48.856 + 90.959\ D_7$	8	.96	16.0 – 49.0 (cm)
Stem a.s. 30 cm, bark	ODW-kg	$Y = -10.054 + 879.140\ BA$	8	.94	16.0 – 49.0 (cm)
Branches, > 2.5 cm	ODW-kg	$Y = 1.759 + 2.554\ D_7CW_m$	8	.88	16.0 – 49.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Hemlock					
Western					
(Krumlik and Kimmins, 1973)					
.... cont'd					
Branches, 0.6 – 2.5 cm	ODW-kg	$Y = 8.504 + 7.119\ D_3CL_m$	8	.76	16.0 – 49.0 (cm)
Branches, < 0.6 cm & foliage	ODW-kg	$Y = -2.601 + 7.480\ D_3CL_m$	8	.88	16.0 – 49.0 (cm)
Branches, < 0.6 cm	ODW-kg	$Y = 0.772 + 2.296\ D_3CL_m$	8	.79	16.0 – 49.0 (cm)
Foliage	ODW-kg	$Y = -3.340 + 5.176\ D_3CL_m$	8	.88	16.0 – 49.0 (cm)
Tree, a.s. 30 cm	ODW-kg	$\log Y = 2.304 + 0.850 \log D_7$	8	.99	16.0 – 49.0 (cm)
Stem, a.s. 30 cm, wood	ODW-kg	$\log Y = 2.112 + 0.870 \log D_7$	8	.99	16.0 – 49.0 (cm)
Stem, a.s. 30 cm, bark	ODW-kg	$\log Y = 3.060 + 1.197 \log BA$	8	.94	16.0 – 49.0 (cm)
Branches, > 2.5 cm	ODW-kg	$\log Y = 3.270 + 3.868 \log D_3$	8	.78	16.0 – 49.0 (cm)
Branches, 0.6 – 2.5 cm	ODW-kg	$\log Y = 0.936 + 1.007 \log D_3CL_m$	8	.91	16.0 – 49.0 (cm)
Branches, < 0.6 cm & foliage	ODW-kg	$\log Y = 0.628 + 1.272 \log D_3CL_m$	8	.96	16.0 – 49.0 (cm)
Branches, < 0.6 cm	ODW-kg	$\log Y = -0.213 + 0.697 \log D_3(CL_m)^2$	8	.80	16.0 – 49.0 (cm)
Foliage	ODW-kg	$\log Y = -0.816 + 1.114 \log D_3(CL_m)^2$	8	.84	16.0 – 49.0 (cm)
Hemlock					
Western					
(Kurucz, 1961)					
Tree	ODW-lbs	$Y = 0.071955\ D_6$	89	.98	2.5 – 90 (cm)
Stem - wood	ODW-lbs	$Y = 0.056537\ D_6$	89	.99	2.5 – 90 (cm)
Stem - bark	ODW-lbs	$Y = 0.008406\ D_6$	89	.93	2.5 – 90 (cm)
Crown	ODW-lbs	$Y = 0.165095\ DC_1 + 0.000255\ DC_2$	89	.81	2.5 – 90 (cm)
Branches > 3/4 in	ODW-lbs	$Y = -0.052963\ DC_1 + 0.000203\ DC_2$	89	.82	2.5 – 90 (cm)
Branches ¼ – 3/4 in	ODW-lbs	$Y = 0.039065\ DC_1 + 0.000015\ DC_2$	89	.80	2.5 – 90 (cm)
Branches < ¼ in	ODW-lbs	$Y = 0.047008\ DC_1 + 0.000019\ DC_2$	89	.79	2.5 – 90 (cm)
Foliage	ODW-lbs	$Y = 0.131984\ DC_1 + 0.000018\ DC_2$	89	.75	2.5 – 90 (cm)
Hobblebush					
(Telfer, 1969)					
Tree	ODW-g	$\ln Y = -4.079 + 3.243 \ln D_4$	19	.95	2.8 – 15.9 (cm)
Foliage	ODW-g	$\ln Y = -4.347 + 2.679 \ln D_4$	19	.93	2.8 – 15.9 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Honeysuckle					
American Fly (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.427 + 2.770 \ln D_4$	20	.96	1.2 – 6.9 (mm)
Foliage	ODW-g	$\ln Y = -2.776 + 2.399 \ln D_4$	20	.86	1.2 – 6.9 (mm)
Holly					
Canada (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.711 + 3.340 \ln D_4$	20	.94	1.9 – 9.0 (mm)
Foliage	ODW-g	$\ln Y = -4.190 + 2.851 \ln D_4$	20	.93	1.9 – 9.0 (mm)
Holly					
False (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.040 + 2.819 \ln D_4$	20	.97	1.6 – 28.5 (mm)
Foliage	ODW-g	$\ln Y = -3.691 + 2.231 \ln D_4$	20	.97	1.6 – 28.5 (mm)
Huckleberry					
Black (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -1.159 + 2.156 \ln D_4$	22	.86	4.6 – 25.7 (mm)
Foliage	ODW-g	$\ln Y = -0.823 + 1.502 \ln D_4$	22	.65	4.6 – 25.7 (mm)
Huckleberry					
Black (Whittaker and Woodwell, 1968)					
Stem	ODW-g	$\log Y = 1.3681 + 3.1008 \ln D_5$	15	.96 (r)	No data available
Stem wood	ODW-g	$\log Y = 1.2449 + 3.1767 \ln D_5$	15	.95 (r)	No data available
Stem bark	ODW-g	$\log Y = 0.6536 + 2.6971 \ln D_5$	15	.89 (r)	No data available
Branches	ODW-g	$\log Y = 1.1167 + 3.0648 \ln D_5$	15	.90 (r)	No data available
Tree	ODW-g	$\log Y = 2.4200 + 1.8627 \ln D_5$	15	.96 (r)	No data available
Inkberry					
(Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.924 + 3.011 \ln D_4$	20	.91	2.3 – 18.7 (mm)
Foliage	ODW-g	$\ln Y = -3.326 + 2.722 \ln D_4$	20	.81	2.3 – 18.7 (mm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Labrador Tea (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.894 + 2.832 \ln D_4$	22	.96	2.3 – 8.3 (mm)
Foliage	ODW-g	$\ln Y = -3.044 + 2.413 \ln D_4$	22	.90	2.3 – 8.3 (mm)
Laurel Sheep (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.205 + 2.384 \ln D_4$	20	.95	0.9 – 8.7 (cm)
Foliage	ODW-g	$\ln Y = -2.675 + 2.091 \ln D_4$	20	.90	0.9 – 8.7 (cm)
Leatherleaf (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.325 + 2.626 \ln D_4$	20	.94	1.4 – 8.2 (mm)
Foliage	ODW-g	$\ln Y = -2.755 + 2.220 \ln D_4$	20	.89	1.4 – 8.2 (mm)
Maple Red (Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.4872 + 1.9012 \ln D_2$	30	.79	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.5803 + 1.8741 \ln D_2$	30	.91	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.1020 + 2.5855 \ln D_2$	30	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 2.1237 + 1.8015 \log D_2$	30	.85	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.3088 + 1.9148 \log D_2$	30	.90	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 2.8479 + 2.6522 \log D_2$	30	.99	2.5 – 15.0 (cm)
Maple Red (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -4.194 + 2.094 \ln D_4$	20	.98	3.8 – 40.1 (mm)
Foliage	ODW-g	$\ln Y = -2.880 + 2.079 \ln D_4$	20	.95	3.8 – 40.1 (mm)
Maple Red (Young et al., 1964)					
Tree tot.	FW-lbs	$\ln Y = .6654 + 2.2234 \ln D_1 + .3390 \ln H_1$	20	.97	15.3 – 29.0 (cm)
Tree tot.	ODW-lbs	46% of FW from above equation	20	.97	15.3 – 29.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Maple					
Red					
(Young et al., 1964)					
.... cont'd					
Tree tot. – Roots < 4"	FW-lbs	$\ln Y = .6020 + 1.9845 \ln D_1 + .4597 \ln H_1$	20	.97	15.3 – 29.0 (cm)
Tree tot. – Roots <4"	ODW-lbs	48% of FW from above equation	20	.97	15.3 – 29.0 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = .1651 + 2.1679 \ln D_1 + .4292 \ln H_1$	20	.96	15.3 – 29.0 (cm)
Tree a.s. 6"	ODW-lbs	47% of FW from above equation	20	.96	15.3 – 29.0 (cm)
Stem a.s. 6"	FW-lbs	$\ln Y = -1.4801 + 1.8801 \ln D_1 + .9332 \ln H_1$	20	.79	15.3 – 29.0 (cm)
Stem a.s. 6"	ODW-lbs	53% of FW from above equation	20	.79	15.3 – 29.0 (cm)
Bole a.s. 6", t. 4"	FW-lbs	$\ln Y = -2.0214 + 2.0215 \ln D_1 + .9670 \ln H_1$	20	.98	15.3 – 29.0 (cm)
Bole a.s. 6", t. 4"	ODW-lbs	53% of FW from above equation	20	.98	15.3 – 29.0 (cm)
All branches	FW-lbs	$\ln Y = 1.5120 + 1.7383 \ln D_1 - .0957 \ln H_1$	20	.57	15.3 – 29.0 (cm)
All branches	ODW-lbs	29% of FW from above equation	20	.57	15.3 – 29.0 (cm)
Branches, < 1 in	FW-lbs	$\ln Y = 1.5749 + .8616 \ln D_1 + .2486 \ln H_1$	20	.29	15.3 – 29.0 (cm)
Branches, < 1 in	ODW-lbs	16% of FW from above equation	20	.29	15.3 – 29.0 (cm)
Stump 6" and roots > 1 in	FW-lbs	$\ln Y = .0730 + 2.4302 \ln D_1 - .0465 \ln H_1$	20	.84	15.3 – 29.0 (cm)
Stump 6" and roots > 1 in	ODW-lbs	49% of FW from above equation	20	.84	15.3 – 29.0 (cm)
Roots >1 in	FW-lbs	$\ln Y = .4468 + 2.2539 \ln D_1 - .1634 \ln H_1$	20	.70	15.3 – 29.0 (cm)
Roots >1 in	ODW-lbs	47% of FW from above equation	20	.70	15.3 – 29.0 (cm)
Roots <1 in	FW-lbs	$\ln Y = -1.4358 + 1.6306 \ln D_1 + .3564 \ln H_1$	20	.70	15.3 – 29.0 (cm)
Roots <1 in	ODW-lbs	27% of FW from above equation	20	.70	15.3 – 29.0 (cm)
Maple					
Red					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 0.770 + 1.917 \ln H_1$	40	.90	2.5 – 10.0 (cm)
Branches	FW-g	$\ln Y = -1.007 + 2.594 \ln H_1$	40	.88	2.5 – 10.0 (cm)
Stem	FW-g	$\ln Y = -0.221 + 2.841 \ln H_1$	40	.97	2.5 – 10.0 (cm)
Roots	FW-g	$\ln Y = 0.196 + 2.473 \ln H_1$	40	.96	2.5 – 10.0 (cm)
Tree tot.	FW-g	$\ln Y = 1.505 + 2.479 \ln H_1$	40	.95	2.5 – 10.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Maple					
Red					
(Young and Carpenter, 1967)					
.... cont'd					
Foliage	ODW-g	$\ln Y = -0.217 + 1.923 \ln H_1$	40	.87	2.5 – 10.0 (cm)
Branches	ODW-g	$\ln Y = -1.583 + 2.577 \ln H_1$	40	.87	2.5 – 10.0 (cm)
Stem	ODW-g	$\ln Y = -0.789 + 2.842 \ln H_1$	40	.96	2.5 – 10.0 (cm)
Roots	ODW-g	$\ln Y = -0.538 + 2.497 \ln H_1$	40	.94	2.5 – 10.0 (cm)
Tree tot.	ODW-g	$\ln Y = +0.728 + 2.532 \ln H_1$	40	.95	2.5 – 10.0 (cm)
Maple					
Striped					
(Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.518 + 2.878 \ln D_4$	20	.99	9.2 – 43.1 (mm)
Foliage	ODW-g	$\ln Y = -3.334 + 2.220 \ln D_4$	20	.98	9.2 – 43.1 (mm)
Maple					
Sugar					
(Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.4060 + 1.6400 \log D_2$	30	.83	2.5 – 15.0 (cm)
Branches	FW-g	$\log Y = 2.6141 + 1.5525 \log D_2$	30	.85	2.5 – 15.0 (cm)
Stem	FW-g	$\log Y = 3.2384 + 2.4834 \log D_2$	30	.99	2.5 – 15.0 (cm)
Foliage	ODW-g	$\log Y = 2.0383 + 1.6701 \log D_2$	30	.83	2.5 – 15.0 (cm)
Branches	ODW-g	$\log Y = 2.4004 + 1.5571 \log D_2$	30	.85	2.5 – 15.0 (cm)
Stem	ODW-g	$\log Y = 3.0609 + 2.4927 \log D_2$	30	.99	2.5 – 15.0 (cm)
Oak					
Black					
(King and Schnell, 1972)					
Tree tot., wood	FW-lbs	$\log Y = 1.12282 + 2.12073 \log D_1$	26	.98	28.8 – 87.0 (cm)
Tree tot., bark	FW-lbs	$\log Y = 0.53961 + 2.01311 \log D_1$	26	.95	28.8 – 87.0 (cm)
Tree tot.	FW-lbs	$\log Y = 1.22080 + 2.10416 \log D_1$	26	.98	28.8 – 87.0 (cm)
Tree tot., wood	ODW-lbs	$\log Y = 0.90951 + 2.11178 \log D_1$	26	.97	28.8 – 87.0 (cm)
Tree tot., bark	ODW-lbs	$\log Y = 0.27002 + 2.08383 \log D_1$	26	.96	28.8 – 87.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Oak					
Black					
(King and Schnell, 1972) . . . . cont'd					
Tree tot.	ODW-lbs	$\log Y = 1.00005 + 2.10621 \log D_1$	26	.97	28.8 – 87.0 (cm)
Branches - wood	FW-lbs	$\log Y = 0.58868 + 2.09742 \log D_1$	26	.88	28.8 – 87.0 (cm)
Branches - bark	FW-lbs	$\log Y = 0.08437 + 2.08487 \log D_1$	26	.86	28.8 – 87.0 (cm)
Branches	FW-lbs	$\log Y = 0.70890 + 2.09360 \log D_1$	26	.88	28.8 – 87.0 (cm)
Branches - wood	ODW-lbs	$\log Y = 0.42075 + 2.06105 \log D_1$	26	.87	28.8 – 87.0 (cm)
Branches - bark	ODW-lbs	$\log Y = -0.22974 + 2.19873 \log D_1$	26	.88	28.8 – 87.0 (cm)
Branches	ODW-lbs	$\log Y = 0.50580 + 2.09357 \log D_1$	26	.88	28.8 – 87.0 (cm)
Bole, s 12", t 8" i.b. - wood	FW-lbs	$\log Y = 0.79041 + 2.13126 \log D_1$	26	.96	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b. - bark	FW-lbs	$\log Y = 0.22951 + 1.77026 \log D_1$	26	.84	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b.	FW-lbs	$\log Y = 0.86878 + 2.10122 \log D_1$	26	.95	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b. - wood	ODW-lbs	$\log Y = 0.55932 + 2.12847 \log D_1$	26	.95	28.8 – 87.0 (cm)
Bole, s 12", t > 8" i.b. - bark	ODW-lbs	$\log Y = -0.02290 + 1.84814 \log D_1$	26	.84	28.8 – 87.0 (cm)
Bole, s 12", t > 8" i.b.	ODW-lbs	$\log Y = 0.63832 + 2.10813 \log D_1$	26	.93	28.8 – 87.0 (cm)
Stump, s 12" and root - wood	FW-lbs	$\log Y = 0.51989 + 2.10556 \log D_1$	26	.99	28.8 – 87.0 (cm)
Stump, s 12" and root - bark	FW-lbs	$\log Y = -0.07786 + 2.10255 \log D_1$	26	.99	28.8 – 87.0 (cm)
Stump, s 12" and root	FW-lbs	$\log Y = 0.61783 + 2.10475 \log D_1$	26	.99	28.8 – 87.0 (cm)
Stump, s 12" and root - wood	ODW-lbs	$\log Y = 0.28238 + 2.12145 \log D_1$	26	.99	28.8 – 87.0 (cm)
Stump, s 12" and root - bark	ODW-lbs	$\log Y = -0.31613 + 2.11888 \log D_1$	26	.99	28.8 – 87.0 (cm)
Stump, s 12" and root	ODW-lbs	$\log Y = 0.38000 + 2.12094 \log D_1$	26	.99	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b. and branches - wood	FW-lbs	$\log Y = 0.99826 + 2.12553 \log D_1$	26	.98	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b. and branches - bark	FW-lbs	$\log Y = 0.42651 + 1.97309 \log D_1$	26	.94	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b. and branches	FW-lbs	$\log Y = 1.09501 + 2.10479 \log D_1$	26	.96	28.8 – 87.0 (cm)
Bole, s 12", t >8" i.b. and branches - wood	ODW-lbs	$\log Y = 0.79251 + 2.10880 \log D_1$	26	.97	28.8 – 87.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Oak					
Black					
(King and Schnell, 1972) . . . . cont'd					
Bole, s 12", t > 8" i.b. and branches - bark	ODW-lbs	$\log Y = 0.13817 + 2.07142 \log D_1$	26	.95	28.8 – 87.0 (cm)
Bole, s 12", t > 8" i.b. and branches	ODW-lbs	$\log Y = 0.88191 + 2.10156 \log D_1$	26	.97	28.8 – 87.0 (cm)
Branches, > 8" - wood	FW-lbs	$\log Y = -0.14531 + 3.24591 \log D_1$	26	.77	28.8 – 87.0 (cm)
Branches, > 8" - bark	FW-lbs	$\log Y = -0.21051 + 3.26054 \log D_1$	26	.79	28.8 – 87.0 (cm)
Branches, > 8"	FW-lbs	$\log Y = -1.136551 + 3.24902 \log D_1$	26	.78	28.8 – 87.0 (cm)
Branches, > 8" - wood	ODW-lbs	$\log Y = -1.163625 + 3.19694 \log D_1$	26	.72	28.8 – 87.0 (cm)
Branches, > 8" - bark	ODW-lbs	$\log Y = -2.37246 + 3.34949 \log D_1$	26	.80	28.8 – 87.0 (cm)
Branches, > 8"	ODW-lbs	$\log Y = -1.57207 + 3.23439 \log D_1$	26	.75	28.8 – 87.0 (cm)
Branches 4" to 8" - wood	FW-lbs	$\log Y = 0.26221 + 1.90836 \log D_1$	26	.69	28.8 – 87.0 (cm)
Branches 4" to 8" - bark	FW-lbs	$\log Y = -0.56463 + 2.13045 \log D_1$	26	.76	28.8 – 87.0 (cm)
Branches 4" to 8"	FW-lbs	$\log Y = 0.30818 + 1.95884 \log D_1$	26	.71	28.8 – 87.0 (cm)
Branches 4" to 8" - wood	ODW-lbs	$\log Y = 0.044075 + 1.90711 \log D_1$	26	.78	28.8 – 87.0 (cm)
Branches 4" to 8" - bark	ODW-lbs	$\log Y = -0.84576 + 2.22581 \log D_1$	26	.78	28.8 – 87.0 (cm)
Branches 4" to 8"	ODW-lbs	$\log Y = -0.06631 + 1.98757 \log D_1$	26	.72	28.8 – 87.0 (cm)
Branches, > 4" - wood	FW-lbs	$\log Y = -0.17751 + 2.51058 \log D_1$	26	.85	28.8 – 87.0 (cm)
Branches, > 4" - bark	FW-lbs	$\log Y = -0.86033 + 2.58256 \log D_1$	26	.87	28.8 – 87.0 (cm)
Branches, > 4"	FW-lbs	$\log Y = -0.09636 + 2.52525 \log D_1$	26	.86	28.8 – 87.0 (cm)
Branches, > 4" - wood	ODW-lbs	$\log Y = -0.37233 + 2.48400 \log D_1$	26	.84	28.8 – 87.0 (cm)
Branches, > 4" - bark	ODW-lbs	$\log Y = -0.11328 + 2.67315 \log D_1$	26	.88	28.8 – 87.0 (cm)
Branches, > 4"	ODW-lbs	$\log Y = -0.31213 + 2.52763 \log D_1$	26	.86	28.8 – 87.0 (cm)
Branches 2" to 4" - wood	FW-lbs	$\log Y = 0.85390 + 1.29387 \log D_1$	26	.51	28.8 – 87.0 (cm)
Branches 2" to 4" - bark	FW-lbs	$\log Y = 0.05307 + 1.54960 \log D_1$	26	.57	28.8 – 87.0 (cm)
Branches 2" to 4"	FW-lbs	$\log Y = 0.90694 + 1.35239 \log D_1$	26	.54	28.8 – 87.0 (cm)
Branches 2" to 4" - wood	ODW-lbs	$\log Y = 0.66439 + 1.27907 \log D_1$	26	.50	28.8 – 87.0 (cm)

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Oak					
Black					
(King and Schnell, 1972) .... cont'd					
Branches 2" to 4" - bark	ODW-lbs	$\log Y = -0.25166 + 1.65302 \log D_1$	26	.60	28.8 – 87.0 (cm)
Branches 2" to 4"	ODW-lbs	$\log Y = 0.68104 + 1.37377 \log D_1$	26	.57	28.8 – 87.0 (cm)
Branches, > 2" - wood	FW-lbs	$\log Y = 0.27107 + 2.25755 \log D_1$	26	.96	28.8 – 87.0 (cm)
Branches, > 2" - bark	FW-lbs	$\log Y = -0.36158 + 2.31293 \log D_1$	26	.96	28.8 – 87.0 (cm)
Branches, > 2"	FW-lbs	$\log Y = 0.36445 + 2.26755 \log D_1$	26	.97	28.8 – 87.0 (cm)
Branches, > 2" - wood	ODW-lbs	$\log Y = -0.09138 + 2.22281 \log D_1$	26	.96	28.8 – 87.0 (cm)
Branches, > 2" - bark	ODW-lbs	$\log Y = -0.65505 + 2.41620 \log D_1$	26	.97	28.8 – 87.0 (cm)
Branches, > 2"	ODW-lbs	$\log Y = 0.15585 + 2.26683 \log D_1$	26	.96	28.8 – 87.0 (cm)
Branches 1" to 2" - wood	FW-lbs	$\log Y = 0.41738 + 1.36260 \log D_1$	26	.58	28.8 – 87.0 (cm)
Branches 1" to 2" - bark	FW-lbs	$\log Y = -0.21154 + 1.48854 \log D_1$	26	.56	28.8 – 87.0 (cm)
Branches 1" to 2"	FW-lbs	$\log Y = 0.50234 + 1.39658 \log D_1$	26	.59	28.8 – 87.0 (cm)
Branches 1" to 2" - wood	ODW-lbs	$\log Y = 0.24444 + 1.34217 \log D_1$	26	.58	28.8 – 87.0 (cm)
Branches 1" to 2" - bark	ODW-lbs	$\log Y = -0.50480 + 1.56628 \log D_1$	26	.60	28.8 – 87.0 (cm)
Branches 1" to 2"	ODW-lbs	$\log Y = 0.30079 + 1.39979 \log D_1$	26	.59	28.8 – 87.0 (cm)
Branches ½" to 1" - wood	FW-lbs	$\log Y = 0.11432 + 1.45778 \log D_1$	26	.49	28.8 – 87.0 (cm)
Branches ½" to 1" - bark	FW-lbs	$\log Y = -0.16487 + 1.38758 \log D_1$	26	.51	28.8 – 87.0 (cm)
Branches ½" to 1"	FW-lbs	$\log Y = 0.30002 + 1.43540 \log D_1$	26	.51	28.8 – 87.0 (cm)
Branches ½" to 1" - wood	ODW-lbs	$\log Y = -0.06862 + 1.44493 \log D_1$	26	.49	28.8 – 87.0 (cm)
Branches ½" to 1" - bark	ODW-lbs	$\log Y = -0.47010 + 1.46578 \log D_1$	26	.55	28.8 – 87.0 (cm)
Branches ½" to 1"	ODW-lbs	$\log Y = 0.07851 + 1.45131 \log D_1$	26	.52	28.8 – 87.0 (cm)
Branches <½" - wood	FW-lbs	$\log Y = 0.06130 + 1.34446 \log D_1$	26	.53	28.8 – 87.0 (cm)
Branches, < ½" - bark	FW-lbs	$\log Y = -0.25690 + 1.41209 \log D_1$	26	.50	28.8 – 87.0 (cm)
Branches, < ½"	FW-lbs	$\log Y = 0.23577 + 1.36564 \log D_1$	26	.53	28.8 – 87.0 (cm)
Branches, < ½" - wood	ODW-lbs	$\log Y = -0.10678 + 1.31634 \log D_1$	26	.53	28.8 – 87.0 (cm)
Branches, < ½" - bark	ODW-lbs	$\log Y = -0.59374 + 1.51130 \log D_1$	26	.56	28.8 – 87.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Oak					
Black					
(King and Schnell, 1972) . . . . cont'd					
Branches, < ½"	ODW-lbs	$\log Y = 0.00817 + 1.38250 \log D_1$	26	.56	28.8 – 87.0 (cm)
Branches, < 2" - wood	FW-lbs	$\log Y = 0.68607 + 1.40754 \log D_1$	26	.62	28.8 – 87.0 (cm)
Branches, < 2" - bark	FW-lbs	$\log Y = 0.25774 + 1.44729 \log D_1$	26	.63	28.8 – 87.0 (cm)
Branches, < 2"	FW-lbs	$\log Y = 0.82284 + 1.42063 \log D_1$	26	.63	28.8 – 87.0 (cm)
Branches, < 2" - wood	ODW-lbs	$\log Y = 0.51562 + 1.38441 \log D_1$	26	.62	28.8 – 87.0 (cm)
Branches, < 2" - bark	ODW-lbs	$\log Y = -0.04710 + 1.52719 \log D_1$	26	.66	28.8 – 87.0 (cm)
Branches, < 2"	ODW-lbs	$\log Y = 0.61270 + 1.42803 \log D_1$	26	.64	28.8 – 87.0 (cm)
Branches, < 4" - wood	FW-lbs	$\log Y = 1.10606 + 1.32800 \log D_1$	26	.61	28.8 – 87.0 (cm)
Branches, < 4" - bark	FW-lbs	$\log Y = 0.48070 + 1.48380 \log D_1$	26	.63	28.8 – 87.0 (cm)
Branches, < 4"	FW-lbs	$\log Y = 1.19125 + 1.37055 \log D_1$	26	.63	28.8 – 87.0 (cm)
Branches, < 4" - wood	ODW-lbs	$\log Y = 0.92513 + 1.31021 \log D_1$	26	.61	28.8 – 87.0 (cm)
Branches, < 4" - bark	ODW-lbs	$\log Y = 0.16728 + 1.58130 \log D_1$	26	.66	28.8 – 87.0 (cm)
Branches, < 4"	ODW-lbs	$\log Y = .97158 + 1.38644 \log D_1$	26	.64	28.8 – 87.0 (cm)
Dead branches - wood	FW-lbs	$\log Y = -0.45497 + 1.79386 \log D_1$	26	.38	28.8 – 87.0 (cm)
Dead branches - bark	FW-lbs	$\log Y = -1.05839 + 1.91374 \log D_1$	26	.45	28.8 – 87.0 (cm)
Dead branches	FW-lbs	$\log Y = -0.36597 + 1.82896 \log D_1$	26	.40	28.8 – 87.0 (cm)
Dead branches - wood	ODW-lbs	$\log Y = -0.68961 + 1.87904 \log D_1$	26	.41	28.8 – 87.0 (cm)
Dead branches - bark	ODW-lbs	$\log Y = -1.26380 + 1.98905 \log D_1$	26	.50	28.8 – 87.0 (cm)
Dead branches	ODW-lbs	$\log Y = -0.58932 + 1.90855 \log D_1$	26	.43	28.8 – 87.0 (cm)
Oak					
Red					
(Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.299 + 2.649 \ln D_4$	20	.99	2.2 – 39.9 (cm)
Foliage	ODW-g	$\ln Y = -2.602 + 2.198 \ln D_4$	20	.97	2.2 – 39.9 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Oak					
Scarlet					
(Whittaker and Woodwell, 1968)					
Branches	ODW-g	$\log Y = 1.0745 + 2.889 \log D_2$	15	.97	No data available
Tree	ODW-g	$\log Y = 2.3948 + 2.1900 \log D_2$	15	.99	No data available
Stem	ODW-g	$\log Y = 2.1564 + 2.2391 \log D_2$	15	.99	No data available
Stem wood	ODW-g	$\log Y = 2.0001 + 2.3025 \log D_2$	15	.99	No data available
Stem bark	ODW-g	$\log Y = 1.6767 + 1.9909 \log D_2$	15	.99	No data available
Stem heart wood	ODW-g	$\log Y = 1.8955 + 2.0316 \log D_2$	15	.99	No data available
Oak					
Scrub					
(Whittaker and Woodwell, 1968)					
Stem	ODW-g	$\log Y = 1.3561 + 2.7146 \log D_5$	15	.97	0 – 3 (cm)
Stem wood	ODW-g	$\log Y = 1.2442 + 2.7663 \log D_5$	15	.97	0 – 3 (cm)
Stem bark	ODW-g	$\log Y = 0.6958 + 2.5831 \log D_5$	15	.97	0 – 3 (cm)
Branches	ODW-g	$\log Y = 0.8596 + 3.2040 \log D_5$	15	.92	0 – 3 (cm)
Tree	ODW-g	$\log Y = 1.7076 + 2.3551 \log D_5$	15	.95	0 – 3 (cm)
Oak					
White					
(Whittaker and Woodwell, 1968)					
Stem	ODW-g	$\log Y = 2.1436 + 2.1844 \log D_2$	No Data	.99	No data available
Stem wood	ODW-g	$\log Y = 1.9610 + 2.2537 \log D_2$	No Data	.99	No data available
Stem bark	ODW-g	$\log Y = 1.7075 + 1.9747 \log D_2$	No Data	.99	No data available
Stem heart wood	ODW-g	$\log Y = 1.3220 + 2.4628 \log D_2$	No Data	.96	No data available
Branches	ODW-g	$\log Y = 1.4383 + 2.3371 \log D_2$	No Data	.96	No data available
Tree	ODW-g	$\log Y = 2.3058 + 2.1666 \log D_2$	No Data	.99	No data available
Pine					
Jack					
(Brown, 1965)					
Live & dead slash, t.< 1.5"	ODW-lbs	$\log Y = 0.8234 + 0.133 \log D_1 + 0.003393 \log SI - 0.0001127 \log TA$	95	.90	5.0 – 25.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Pine					
Jack					
(Brown, 1965)					
.... cont'd					
Live slash, t. < 1.5''	ODW-lbs	$\log Y = 0.9733 + 0.1148 \log D_1 - 0.0001556 \log TA$	95	.82	5.0 – 25.0 (cm)
Dead branches	ODW-lbs	$\log Y = 0.2087 \log D_1 - 0.0978$	95	.78	5.0 – 25.0 (cm)
Pine					
Jack (good site)					
(Doucet, et al., 1976)					
Stem wood	ODW-g	$\log Y = 0.847345 + 1.430786 \log D_2 + 0.827688 \log H_3$	18	.99	5.3 – 21.4 (cm)
Stem bark	ODW-g	$\log Y = 0.708473 + 1.845331 \log D_2 + 0.707754 \log H_3$	18	.94	5.3 – 21.4 (cm)
Live branches	ODW-g	$\log Y = 0.525747 + 2.574138 \log D_2 + 0.210360 \log H_3$	18	.91	5.3 – 21.4 (cm)
Dead branches	ODW-g	$\log Y = -2.703526 + 0.187033 \log D_2 + 5.083131 \log H_3$	17	.90	5.3 – 21.4 (cm)
Foliage	ODW-g	$\log Y = -0.043127 + 2.106884 \log D_2 + 0.897754 \log H_3$	18	.96	5.3 – 21.4 (cm)
Cones	ODW-g	$\log Y = -1.304145 + 2.354415 \log D_2 + 0.609672 \log H_3$	18	.43	5.3 – 21.4 (cm)
Tree	ODW-g	$\log Y = 1.053679 + 1.636275 \log D_2 + 1.568117 \log H_3$	17	.99	5.3 – 21.4 (cm)
Pine					
Jack (medium site)					
(Doucet, et al., 1976)					
Stem wood	ODW-g	$\log Y = 1.348119 + 2.052095 \log D_2 + 0.793679 \log H_3$	18	.99	1.8 – 19.3 (cm)
Stem bark	ODW-g	$\log Y = 1.168162 + 1.852994 \log D_2 + 0.306818 \log H_3$	18	.97	1.8 – 19.3 (cm)
Live branches	ODW-g	$\log Y = 1.237128 + 4.539180 \log D_2 - 2.280269 \log H_3$	18	.99	1.8 – 19.3 (cm)
Dead branches	ODW-g	$\log Y = 1.294463 + 2.826062 \log D_2 - 0.943957 \log H_3$	18	.88	1.8 – 19.3 (cm)
Foliage	ODW-g	$\log Y = 0.077329 + 4.008232 \log D_2 - 0.914902 \log H_3$	18	.96	1.8 – 19.3 (cm)
Cones	ODW-g	$\log Y = -4.158016 + 3.553876 \log D_2 + 2.396761 \log H_3$	16	.45	1.8 – 19.3 (cm)
Tree	ODW-g	$\log Y = 1.752336 + 2.447128 \log D_2 + 0.196253 \log H_3$	18	.45	1.8 – 19.3 (cm)
Pine					
Jack					
(Hegyi, 1972)					
Tree	ODW-kg	$\log Y = -1.0368 + 2.4206 \log D_2$	77	.99	2.9 – 31.7 (cm)
Stem	ODW-kg	$\log Y = -1.5481 + 2.7144 \log D_2$	77	.95	2.9 – 31.7 (cm)
Crown	ODW-kg	$\log Y = -1.1810 + 1.9222 \log D_2$	77	.77	2.9 – 31.7 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Pine					
Jack					
(Hegyi, 1972)					
. . . cont'd					
Lower 1/3 of crown	ODW-kg	$\log Y = -1.4178 + 1.7458 \log D_2$	77	.65	2.9 – 31.7 (cm)
Middle 1/3 of crown	ODW-kg	$\log Y = -1.6155 + 1.9969 \log D_2$	77	.75	2.9 – 31.7 (cm)
Upper 1/3 of crown	ODW-kg	$\log Y = -2.2699 + 2.1090 \log D_2$	77	.83	2.9 – 31.7 (cm)
Foliage	ODW-kg	$\log Y = -1.4289 + 1.7188 \log D_2$	77	.70	2.9 – 31.7 (cm)
Cones	ODW-kg	$\log Y = -4.9319 + 3.8667 \log D_2$	77	.72	2.9 – 31.7 (cm)
Pine					
Jack					
(Keen, 1963)					
Bole, s*, t 3"	FW-lbs	$\log Y = 0.611 + 2.301 \log D_1$	89	.98	10.0 – 40.0 (cm)
Tree, s*	FW-lbs	$\log Y = 0.777 + 2.214 \log D_1$	89	.98	10.0 – 40.0 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = -0.9458 + 2.060 \log D_1 + 0.9831 \log H_1$	78	.99	10.0 – 40.0 (cm)
Slash	FW-lbs	$\log Y = 0.180 + 2.039 \log D_1$	90	.70	10.0 – 40.0 (cm)
* = D_1					
Pine					
Lodgepole					
(Gary, 1976)					
Needles & branchwood	ODW-kg	$Y = -10.594 + 1.528\ D_2$	117	.78	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -8.727 + 1.656\ D$	117	.78	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -3.809 + 2.070\ CL$	117	.33	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -17.672 + 2.538\ H_3$	117	.44	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -2.442 + 0.145\ D_2CL$	117	.68	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -5.204 + 0.105\ D_2H_3$	117	.74	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -0.833 + 0.005\ D_7H_3$	117	.80	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = 0.605 + 0.004\ (D_2)^3$	117	.83	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = -3.300 + 0.154\ D_2 + 0.061\ (D_2)^2$	117	.82	6.6 – 19.8 (cm)
Needles & branchwood	ODW-kg	$Y = 0.0047\ D_2^{2.916}$	117	.91	6.6 – 19.8 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Pine					
Lodgepole (Johnstone, 1970)					
Tree tot.	ODW-lbs	$\log Y = -0.9664 + 0.9971 \log D_6$	85	.99	10.0 – 33.5 (cm)
Tree, s 12"	ODW-lbs	$\log Y = -0.9878 + 0.9853 \log D_6$	85	.98	10.0 – 33.5 (cm)
Stem, s 12"	ODW-lbs	$\log Y = -0.8887 + 0.9381 \log D_6$	85	.98	10.0 – 33.5 (cm)
Stem, s 12", bark	ODW-lbs	$\log Y = -2.5841 + 1.1395 \log D_6$	85	.86	10.0 – 33.5 (cm)
Needles	ODW-lbs	$\log Y = -2.9508 + 1.1480 \log D_6$	85	.85	10.0 – 33.5 (cm)
Branches	ODW-lbs	$\log Y = -4.1255 + 1.5087 \log D_6$	85	.89	10.0 – 33.5 (cm)
Stump & root	ODW-lbs	$\log Y = -1.880 + 1.022 \log D_6$	85	.95	10.0 – 33.5 (cm)
Roots	ODW-lbs	$\log Y = -2.1045 + 1.0704 \log D_6$	85	.94	10.0 – 33.5 (cm)
Pine					
Lodgepole (Kiil, 1967)					
Branch - live	ODW-lbs	$\log Y = -0.67346 + 1.26470 \log D_1 + 1.36575 \log CW$	101	.95	2.3 – 52.8 (cm)
Crown	ODW-lbs	$\log Y = -0.642994 + 1.30603 \log D_1 + 1.37732 \log CW$	101	.96	2.3 – 52.8 (cm)
Pine					
Lodgepole (Kimmins, 1974)					
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 2.405 + 1.222 \log D_7 - 0.121 \log D_1$	13	.99	10.0 – 32.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 3.025 + 2.207 \log D_3$	13	.95	10.0 – 32.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.530 + 1.101 \log D_7 + 0.399 \log D_7$	13	.97	10.0 – 32.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.271 + 1.189 \log D_3 CL_m$	13	.88	10.0 – 32.0 (cm)
Foliage	ODW-kg	$\log Y = 0.562 + 1.322 \log D_7$	13	.95	10.0 – 32.0 (cm)
Pine					
Pitch (Whittaker and Woodwell, 1968)					
Stem	ODW-g	$\log Y = 1.8758 + 2.3261 \log D_2$	15	.99	No data available
Stem wood	ODW-g	$\log Y = 1.7226 + 2.3779 \log D_2$	15	.99	No data available
Stem bark	ODW-g	$\log Y = 1.3832 + 2.1249 \log D_2$	15	.99	No data available

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Pine					
Pitch					
(Whittaker and Woodwell, 1968) .... cont'd					
Stem heart wood	ODW-g	$\log Y = 1.7553 + 2.3291 \log D_2$	15	.99	No data available
Branches	ODW-g	$\log Y = 1.1100 + 2.5516 \log D_2$	15	.98	No data available
Tree	ODW-g	$\log Y = 2.0171 + 2.3373 \log D_2$	15	.99	No data available
Pine					
Red					
(Brown, 1965)					
Live slash t.< 1.5"	ODW-lbs	$\log Y = 0.9990 + 0.0946 \log D_1 + 0.003614 \log SI - 0.0002722 \log TA$	103	.86	5.0 – 25.0 (cm)
Pine					
Scots					
(Hakkila, 1972)					
Stump* and Roots > 5 cm * s height = 4.7 + .19 diameter of stump top	ODW-kg	$Y = -4.9 + 0.044 S_1^2$	213	.92 (r)	15 – 45 (cm)
Pine					
Scots					
(Hakkila, 1971)					
Branches, wood	ODW-kg	$Y = 7.2 + 0.0505 D_2^2 - 1.39 H_3 + 0.14 D_2BR$	240	.93 (r)	10.0 – 30.0 (cm)
Slash, t < 6 cm, wood	ODW-kg	$Y = 8.7 + 0.507 D_2^2 - 1.39 H_3 + 0.14 D_2BR$	240	.93 (r)	10.0 – 30.0 (cm)
Foliage	ODW-kg	$Y = -9.5 + 0.54 D_2 + 0.117 CR$	240	.89 (r)	7 – 30 (cm)
Slash	ODW-kg	$Y = -0.1 + 0.155 D_2^2$	240	.90 (r)	5.0 – 25.0 (cm)
Slash	ODW-kg	$Y = -0.1 + 0.00141 D_2^2 CR$	240	.94 (r)	10 – 30 (cm)
Pine					
Slash					
(Curtis, 1965)					
Bole, s ?, t 2"	FW-lbs	$Y = -60.3 + 0.145 D_6 + 2.501 A_1$	900	.98	No data available
Bole, s ?, t 2", bark	FW-lbs	$Y = 15.7 + 0.012 D_6 + 0.619 A1$	900	.91	No data available
Bole, s ?, t 2", wood	ODW-% of FW	$Y = -1.788 A_2 - .099 A_3 + .777$	900	.46	No data available

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Pine					
White					
(Young, et al., 1964)					
Tree tot.	FW-lbs	$\ln Y = .6592 + 2.2234 \ln D_1 + .3390 \ln H_1$	27	.98	14.5 – 24.5 (cm)
Tree tot.	ODW-lbs	36% of FW from above equation	27	.98	14.5 – 24.5 (cm)
Tree tot. – Roots < 4"	FW-lbs	$\ln Y = .2050 + 2.1883 \ln D_1 + .4514 \ln H_1$	27	.98	14.5 – 24.5 (cm)
Tree tot. – Roots < 4"	ODW-lbs	37% of FW from above equation	27	.98	14.5 – 24.5 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = .2150 + 2.1679 \ln D_1 + .4292 \ln H_1$	27	.98	14.5 – 24.5 (cm)
Tree a.s. 6"	ODW-lbs	36% of FW from above equation	27	.98	14.5 – 24.5 (cm)
Stem a.s. 6"	FW-lbs	$\ln Y = -1.4111 + 1.8801 \ln D_1 + .9332 \ln H_1$	27	.83	14.5 – 24.5 (cm)
Stem a.s. 6"	ODW-lbs	40% of FW from above equation	27	.83	14.5 – 24.5 (cm)
Bole a.s. 6", t. 4"	FW-lbs	$\ln Y = -1.9231 + 2.0215 \ln D_1 + .9670 \ln H_1$	27	.98	14.5 – 24.5 (cm)
Bole a.s. 6", t. 4"	ODW-lbs	40% of FW from above equation	27	.98	14.5 – 24.5 (cm)
All branches	FW-lbs	$\ln Y = 3.6340 + 3.6004 \ln D_1 - 1.6346 \ln H_1$	27	.91	14.5 – 24.5 (cm)
All branches	ODW-lbs	16% of FW from above equation	27	.91	14.5 – 24.5 (cm)
Branches < 1 in	FW-lbs	$\ln Y = 2.7899 + 2.7716 \ln D_1 - 1.0629 \ln H_1$	27	.87	14.5 – 24.5 (cm)
Branches < 1 in	ODW-lbs	13% of FW from above equation	27	.87	14.5 – 24.5 (cm)
Stump 6" and roots > 1 in	FW-lbs	$\ln Y = 2.0191 + 3.2156 \ln D_1 - .9513 \ln H_1$	27	.93	14.5 – 24.5 (cm)
Stump 6" and roots > 1 in	ODW-lbs	38% of FW from above equation	27	.93	14.5 – 24.5 (cm)
Roots > 1 in	FW-lbs	$\ln Y = 1.7421 + 3.2955 \ln D_1 - 1.0554 \ln H_1$	27	.91	14.5 – 24.5 (cm)
Roots > 1 in	ODW-lbs	38% of FW from above equation	27	.91	14.5 – 24.5 (cm)
Roots > 1 in	FW-lbs	$\ln Y = -1.8053 + 1.6306 \ln D_1 + .3564 \ln H_1$	27	.85	14.5 – 24.5 (cm)
Roots < 1 in	ODW-lbs	21% of FW from above equation	27	.85	14.5 – 24.5 (cm)
Pine					
White sp.					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 1.663 + 1.752 \ln H_1$	10	.89	0.0 – 75 (mm)
Branches	FW-g	$\ln Y = 1.253 + 2.007 \ln H_1$	10	.94	0.0 – 75 (mm)
Stem	FW-g	$\ln Y = 0.346 + 2.913 \ln H_1$	10	.99	0.0 – 75 (mm)
Roots	FW-g	$\ln Y = 0.831 + 2.379 \ln H_1$	10	.94	0.0 – 75 (mm)

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Pine					
White sp. (Young and Carpenter, 1967) .... cont'd					
Tree tot.	FW-g	$\ln Y = 2.492 + 2.346 \ln H_1$	10	.95	0.0 – 75 (mm)
Foliage	ODW-g	$\ln Y = 0.808 + 1.750 \ln H_1$	10	.89	0.0 – 75 (mm)
Branches	ODW-g	$\ln Y = 0.413 + 2.064 \ln H_1$	10	.95	0.0 – 75 (mm)
Stem	ODW-g	$\ln Y = -0.177 + 2.814 \ln H_1$	10	.98	0.0 – 75 (mm)
Roots	ODW-g	$\ln Y = -0.081 + 2.401 \ln H_1$	10	.94	0.0 – 75 (mm)
Tree tot.	ODW-g	$\ln Y = 1.678 + 2.352 \ln H_1$	10	.95	0.0 – 75 (mm)
Rhododendron (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.833 + 2.612 \ln D_4$	20	.92	2.8 – 10.7 (mm)
Foliage	ODW-g	$\ln Y = -3.075 + 2.050 \ln D_4$	20	.83	2.8 – 10.7 (mm)
Salal (Stanek and State, 1978)					
Tree	ODW-g/m^2	$Y = 3.612\ V + .02464\ V^2$	50	.92	– – –
Tree	ODW-g/m^2	$Y = 28.65\ ME$	35	.90	– – –
Spirea Meadow Sweet (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.337 + 2.579 \ln D_4$	20	.91	1.0 – 12.6 (mm)
Foliage	ODW-g	$\ln Y = -2.257 + 1.720 \ln D_4$	20	.90	1.0 – 12.6 (mm)
Spruce					
Black (Keen, 1963)					
Bole, s*, t 3", wood	FW-lbs	$\log Y = 0.321 + 2.430 \log D_1$	58	.92 (r)	10.0 – 40.0 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = 0.477 + 2.345 \log D_1$	318	.95 (r)	10.0 – 40.0 (cm)
Tree, s*	FW-lbs	$\log Y = 0.755 + 2.209 \log D_1$	132	.96 (r)	10.0 – 40.0 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = -0.5474 + 1.861 \log D_1 + 0.839 \log H_1$	312	.98 (r)	10.0 – 40.0 (cm)
Bole, s*, t 3", wood	FW-lbs	$\log Y = -1.0122 + 1.724 \log D_1 + 1.142 \log H_1$	57	.98 (r)	10.0 – 40.0 (cm)
Slash	FW-lbs	$\log Y = 0.500 + 1.865 \log D_1$	132	.81 (r)	10.0 – 40.0 (cm)

Appendix

SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Spruce Norway (Hakkila, 1972) Stump * and Roots 5 cm * height = 2.6 + 0.26 diameter of stump top	ODW-kg	$Y = -7.1 + 0.060\ S_1^2$	239	.83 (r)	15 – 40 (cm)
Spruce Norway (Hakkila, 1972) Slash	FW-kg	$Y = -7.8 + 2.03\ D_2 + 0.169\ D_2$	245	.88 (r)	5 – 25 (cm)
Slash	ODW-kg	$Y = 5.9 + 0.00122\ D_2^2 CR^2$	245	.93 (r)	10 – 30 (cm)
Foliage	ODW-kg	$Y = -16.0 + 5.18\ D_2 - 0.0634\ D_2 L + 0.118\ CR$	245	.83 (r)	7.0 – 30.0 (cm)
Branches, wood	ODW-kg	$Y = 2.9 - 1.01\ D_2 + 0.055\ D_2^2 + 0.16\ D_2 BR$	245	.94 (r)	10 – 30 (cm)
Slash, t < 6 cm, wood	ODW-kg	$Y = 4.4 - 0.99\ D_2 + 0.0557\ D_2^2 + 0.16\ D_2 BR$	245	.93 (r)	10 – 30 (cm)
Spruce Red (Young, et al., 1964) Tree tot.	FW-lbs	$\ln Y = .6972 + 2.2234\ \ln D_1 + .3390\ \ln H_1$	25	.98	14.3 – 24.5 (cm)
Tree tot.	ODW-lbs	41% of FW from above equation	25	.98	14.3 – 24.5 (cm)
Tree tot. – Roots < 4"	FW-lbs	$\ln Y = 1.1400 + 2.2608\ \ln D_1 + .1933\ \ln H_1$	25	.98	14.3 – 24.5 (cm)
Tree tot. – Roots < 4"	ODW-lbs	41% of FW from above equation	25	.98	14.3 – 24.5 (cm)
Tree a.s. 6"	FW-lbs	$\ln Y = .1922 + 2.1679\ \ln D_1 + .4292\ \ln H_1$	25	.98	14.3 – 24.5 (cm)
Tree a.s. 6"	ODW-lbs	40% of FW from above equation	25	.98	14.3 – 24.5 (cm)
Stem a.s. 6"	FW-lbs	$\ln Y = -1.5151 + 1.8801\ \ln D_1 + .9332\ \ln H_1$	25	.99	14.3 – 24.5 (cm)
Stem a.s. 6"	ODW-lbs	49% of FW from above equation	25	.99	14.3 – 24.5 (cm)
Bole a.s. 6", t. 4"	FW-lbs	$\ln Y = -2.0267 + 2.0215\ \ln D_1 + .9670\ \ln H_1$	25	.99	14.3 – 24.5 (cm)
Bole a.s. 6", t. 4"	ODW-lbs	50% of FW from above equation	25	.99	14.3 – 24.5 (cm)
All branches	FW-lbs	$\ln Y = 3.1780 + 3.3292\ \ln D_1 - 1.2874\ \ln H_1$	25	.91	14.3 – 24.5 (cm)
All branches	ODW-lbs	10% of FW from above equation	25	.91	14.3 – 24.5 (cm)
Branches, < 1 in	FW-lbs	$\ln Y = 3.4430 + 2.9884\ \ln D_1 - 1.2006\ \ln H_1$	25	.88	14.3 – 24.5 (cm)
Branches, < 1 in	ODW-lbs	9% of FW from above equation	25	.88	14.3 – 24.5 (cm)

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SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Spruce					
Red					
(Young, et al., 1964)					
.... cont'd					
Stump 6" and roots >1 in	FW-lbs	$\ln Y = -.8508 + 2.5050 \ln D_1 + .1672 \ln H_1$	25	.95	14.3 – 24.5 (cm)
Stump 6" and roots >1 in	ODW-lbs	45% of FW from above equation	25	.95	14.3 – 24.5 (cm)
Roots >1 in	FW-lbs	$\ln Y = -.6402 + 2.6671 \ln D_1 - .0441 \ln H_1$	25	.93	14.3 – 24.5 (cm)
Roots >1 in	ODW-lbs	44% of FW from above equation	25	.93	14.3 – 24.5 (cm)
Roots <1 in	FW-lbs	$\ln Y = -1.5671 + 1.6306 \ln D_1 + .3564 \ln H_1$	25	.71	14.3 – 24.5 (cm)
Roots <1 in	ODW-lbs	40% of FW from above equation	25	.71	14.3 – 24.5 (cm)
Spruce					
Red sp.					
(Young and Carpenter, 1967)					
Foliage	FW-g	$\ln Y = 3.674 + 1.619 \ln H_1$	40	.94	2.5 – 10.0 (cm)
Branches	FW-g	$\ln Y = 2.354 + 1.836 \ln H_1$	40	.95	2.5 – 10.0 (cm)
Stem	FW-g	$\ln Y = 1.242 + 2.687 \ln H_1$	40	.98	2.5 – 10.0 (cm)
Roots	FW-g	$\ln Y = 2.070 + 2.145 \ln H_1$	40	.97	2.5 – 10.0 (cm)
Tree tot.	FW-g	$\ln Y = 3.972 + 2.031 \ln H_1$	40	.98	2.5 – 10.0 (cm)
Foliage	ODW-g	$\ln Y = 2.891 + 1.626 \ln H_1$	40	.94	2.5 – 10.0 (cm)
Branches	ODW-g	$\ln Y = 1.833 + 1.847 \ln H_1$	40	.95	2.5 – 10.0 (cm)
Stem	ODW-g	$\ln Y = 1.512 + 2.705 \ln H_1$	40	.98	2.5 – 10.0 (cm)
Roots	ODW-g	$\ln Y = 1.376 + 2.136 \ln H_1$	40	.97	2.5 – 10.0 (cm)
Tree tot.	ODW-g	$\ln Y = 3.239 + 2.055 \ln H_1$	40	.98	2.5 – 10.0 (cm)
Spruce					
White					
(Baskerville, 1965)					
Tree	FW-lbs	$\log Y = 0.415 + 2.64 \log D_1$	12	.99	2.5 – 25.0 (cm)
Tree	ODW-lbs	$\log Y = 0.150 + 2.48 \log D_1$	13	.99	2.5 – 25.0 (cm)
Stem wood	ODW-lbs	$\log Y = 0.028 + 2.36 \log D_1$	13	.99	2.5 – 25.0 (cm)
Stem bark	ODW-lbs	$\log_{100} Y = 0.885 + 2.61 \log_{100} D_1$	14	.99	2.5 – 25.0 (cm)

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SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Spruce White (Baskerville, 1965) .... cont'd					
Branches	ODW-lbs	$\log Y = -0.855 + 2.78 \log D_1$	14	.97	2.5 – 25.0 (cm)
Foliage	ODW-lbs	$\log_{10} Y = 0.066 + 2.85 \log_{10} D_1$	14	.97	2.5 – 25.0 (cm)
Dead branches	ODW-lbs	$\log_{10} Y = -0.175 + 2.49 \log_{10} D_1$	13	.94	2.5 – 25.0 (cm)
Spruce White (Keen, 1963)					
Bole, s*, t 3", wood	FW-lbs	$\log Y = 0.090 + 2.601 \log D_1$	50	.99 (r)	10.0 – 52.5 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = 0.370 + 2.425 \log D_1$	164	.98 (r)	10.0 – 52.5 (cm)
Tree, s*	FW-lbs	$\log Y = 0.759 + 2.217 \log D_1$	112	.98 (r)	10.0 – 52.5 (cm)
Bole, s*, t 3"	FW-lbs	$\log Y = -0.4907 + 1.844 \log D_1 + 0.831 \log H_1$	160	.99 (r)	10.0 – 52.5 (cm)
Bole, s*, t 3", wood	FW-lbs	$\log Y = -0.5643 + 1.854 \log D_1 + 0.829 \log H_1$	47	.99 (r)	10.0 – 52.5 (cm)
Slash	FW-lbs	$\log Y = 0.742 + 1.753 \log D_1$	112	.82 (r)	10.0 – 52.5 (cm)
* = D_1					
Spruce White (Kiil, 1967)					
Branches - live	ODW-lbs	$\log Y = -0.51780 + 1.27747 \log D_1 + 1.35248 \log CW$	(6)	.96	4.5 – 66.8 (cm)
Crown	ODW-lbs	$\log Y = -0.384118 + 1.35610 \log D_1 + 1.19533 \log CW$	60	.97	4.5 – 66.8 (cm)
Spruce White (Kimmins, 1974)					
Bole, a.s. 30.5 cm, t. 2.5 cm, wood	ODW-kg	$\log Y = 2.152 + 0.929 \log D_7$	11	.97	14.1 – 90.0 (cm)
Bole, a.s. 30.5 cm, t. 2.5 cm, bark	ODW-kg	$\log Y = 3.006 + 2.253 \log D_2$	11	.95	14.1 – 90.0 (cm)
Branches > 2.5 cm	ODW-kg	$\log Y = -4.863 + 3.256 \log (BA + CL_m CW_m)$	11	.76	14.1 – 90.0 (cm)
Branches, .64 – 2.5 cm	ODW-kg	$\log Y = 0.903 + 0.007 \log (BA + CL_m CW_m)$	11	.77	14.1 – 90.0 (cm)
Branches, < .64 cm	ODW-kg	$\log Y = 0.795 + 0.054 \log D_3 CL_m$	11	.87	14.1 – 90.0 (cm)
Foliage	ODW-kg	$\log Y = 1.044 + 0.053 \log D_3 CL_m$	11	.84	14.1 – 90.0 (cm)

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SPECIES (Reference) Equation Title	FW or ODW	PREDICTION EQUATION	n	R^2 or r	RANGE OF DIAMETERS AT GROUND LEVEL IN MM OR DIAMETER AT BREAST HEIGHT IN CM
Willow (Ribe, 1973)					
Foliage	FW-g	$\log Y = 2.5653 + 1.6978 \log D_2$	30	.68	2.5 – 7.6 (cm)
Branches	FW-g	$\log Y = 2.6951 + 1.7736 \log D_2$	30	.70	2.5 – 7.6 (cm)
Stem	FW-g	$\log Y = 3.0186 + 2.4204 \log D_2$	30	.93	2.5 – 7.6 (cm)
Foliage	ODW-g	$\log Y = 2.1879 + 1.6442 \log D_2$	30	.67	2.5 – 7.6 (cm)
Branches	ODW-g	$\log Y = 2.4822 + 1.6624 \log D_2$	30	.77	2.5 – 7.6 (cm)
Stem	ODW-g	$\log Y = 2.7610 + 2.3391 \log D_2$	30	.91	2.5 – 7.6 (cm)
Willow (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -1.519 + 2.325 \log D_2$	20	.97	4.5 – 34.1 (mm)
Foliage	ODW-g	$\ln Y = -1.324 + 1.729 \log D_4$	20	.82	4.5 – 34.1 (mm)
Witch Hazel (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -3.037 + 2.900 \ln D_4$	21	.99	1.8 – 43.1 (mm)
Foliage	ODW-g	$\ln Y = -2.729 + 2.162 \ln D_4$	20	.96	1.8 – 43.1 (mm)
Whithe Red (Telfer, 1969)					
Tree	ODW-g	$\ln Y = -2.613 + 2.774 \ln D_4$	20	.98	2.9 – 31.0 (mm)
Foliage	ODW-g	$\ln Y = -3.111 + 2.205 \ln D_4$	20	.95	2.9 – 31.0 (mm)